



Università
di Catania

4th Workshop
SIB group “Tumor Biochemistry”

Biochemical Dynamics in Tumor Microenvironment: new Insights and Implications
16-17th September 2024, University of Catania
Department of Biomedical and Biotechnological Sciences (BIOMETEC)
Catania

Scientific program

Monday, 16th

12:00-13:15 Registration of Participants and Welcome lunch

13:15-13:45 Welcome address

14:00-14:45 *Chairs: Paola Chiarugi and Giovanni Li Volti*

Plenary lecture

Federico Bussolino (University of Turin)

“Neuroigin-YAP axis contributes to the early phases of oncogenesis of pancreatic ductal adenocarcinoma”

SESSION 1: The Role of Mitochondria in Cancer: Mechanisms and Therapeutic Implications

Chairs: Marco Fiorillo and Chiara Riganti

15:00-15:15 **Alessandro Carrer** (University of Padua)

Opa1-driven cristae remodeling promotes pancreatic cancer progression

15:15-15:30 **Manuela Sollazzo** (University of Bologna)

Sparc release upon respiratory complex impairment supports survival and migration of ovarian cancer cells

15.30-15.55 Short talks

Aristide Ferrante (University of Foggia)

Mitochondrial function analysis in bladder cancer cell lines: targeting metabolism as a new therapeutic perspective

Alessandra Di Masi (University of Rome 3)

Clinically relevant chk1 inhibitors induce the differentiation of acute promyelocytic leukemia cells by modulating the mitochondrial respiration and through an inflammasome-dependent mechanism

Davide Gnocchi (University of Bari)

Dysfunctional mitochondrial bioenergetics sustains drug resistance and alterations in the microenvironment in cancer cells

SESSION 2: Metabolism and Cancer: Understanding the Biochemical Pathways and Therapeutic Targets

Chairs: Domenica Scumaci and Anna Maria Porcelli

Invited Lecture

Paola Chiarugi (University of Florence)

“Extracellular nutrients driving metastatic organotropism in prostate cancer: when tumor cells go hunting the most favorable environment”

16:25-16:40 Giacomo Lazzarino (UniCamillus - Saint Camillus International University of Health and Medical Sciences)

Molecular strategies for cancer growth: different cancer, different metabolic adaptation

16:40-16:55 Sebastiano Giallongo (University of Enna “Kore”)

Glutamate induces intracellular fumarate accumulation to rewire mesenchymal stromal cells metabolic and epigenetic profiles

16.55 -17.20 Short talks

Marcella Bonanomi (CNR IBFM Milan)

Metabolic signature of therapeutic resistance in pancreatic ductal adenocarcinoma cell lines under combinatorial treatment

Sonia Siragusa (University of Piemonte Orientale)

Selective boron delivery via aldh1a3- targeted compounds for enhanced neutron capture therapy in glioma stem cells

Vanessa Checchetto (University of Padua)

Bioid-based intact cell interactome of the kv1.3 potassium channel identifies a kv1.3-stat3-p53 cellular signaling pathway

17:20-17:45 Coffee Break and poster session

SESSION 3: *Cell Death Pathways in Cancer: Mechanisms, Implications and Therapeutic Approaches*

Chairs: Daniele Tibullo and Daniela Capello

17:45-18:00 **Antonietta Notaro** (University of Palermo)

Targeting redox balance and autophagy by grape pomace extract: a critical point to decide cancer cell fate

18.00-18.15 **Enrico La Spina** (University of Catania)

Exploring lipid metabolic dynamics in multiple myeloma: implications for anti-BCMA immunotherapy resistance and ferroptotic cell death



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18.15-18.55 Short talks

Valeria Consoli (University of Catania)

Haloperidol antitumoral effect through engagement of ferroptosis and heme oxygenase-1 in breast cancer cells

Michele Guescini (University of Urbino Carlo Bo)

Caveolin-1 overexpression stimulates extracellular vesicle secretion affecting tumor microenvironment in a model of rhabdomyosarcoma

Carolina Punziano (University of Naples "Federico II")

Induction of ferroptosis by dimethyl fumarate in cervical carcinoma cells through redox modulation

Carina Florina Cojocaru (RCCS-FPO)

Semaphorin3A normalizes the tumor microenvironment of PDAC by acting on cancer associated fibroblasts and on the immune compartment

20:00 Shuttle Transfer from Conference Venue for Social dinner participants



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Scientific program

Tuesday, 17th

9:00-09:45 Chairs: Giovanni Li Volti and Ignazio Barbagallo

Plenary lecture

Gennaro Melino (University of Rome, Tor Vergata)
“An update on epithelial and cancer metabolism”

SESSION 1: Integrative Perspectives on Cancer: Genetic, Epigenetic and Nutritional Influences

Chairs: Ferdinando Chiaradonna and Giovanni Giurdanella

9:45-10:00 Sonia Emanuele (University of Palermo)

Epigenetic tools for potential colon cancer treatment: HDAC inhibitors and LncRNA H19

10.00-10.15 Iris Chiara Salaroglio (University of Turin)

The blood brain barrier permeability is affected by the differentiation degree of glioblastoma

10.15-10.35 Short talks

Dragana Nikolic (University of Bari)

Ketosis enhances the inhibitory effect of olive leaf extract on cancer cell growth

Alice Cattivelli (University of Modena and Reggio Emilia)

Crosstalk between dietary phenolic compounds and gut microbiota: the potential impact on colon cancer microenvironment

Sabrina De Lella (University of Naples “Federico II”)

Post-transcriptional regulation of the splicing factor LUC7L3 by TRAP1 and its implication in cancer

SESSION 2: *Advances in Tumor Biology and Targeted Therapies in Cancer*

Chairs: Luisa Tesoriere and Andrea Morandi

10:35-10:50 Valentina Comunanza (University of Turin)

Single-nuclei RNA-seq reveals transcriptional landscape and tumor microenvironment heterogeneity induced by VEGFA/BRAF targeting in murine melanoma model

10.50-11.05 Veronica Pompei (Polytechnic University of Marche)

Role of paraoxonase-2 enzyme in human osteosarcoma: contribution to cell proliferation, migration and chemosensitivity

10:05-11:25 Short talks

Umberto Candia (University of Naples Federico II)

The EMT-inducing transcription factor ZNF224 is a driver of melanoma cellular plasticity

Francesca Bersani (University of Turin)

Lung cancer organoids capture limited genetic heterogeneity at relapse to molecular therapy and define a functional interplay among tyrosine kinase receptors to control phenotypic adaptation in drug tolerant cells

Chiara Malasomma (University of Naples Federico II)

Nuclear programmed death ligand 1 (CD274) controls glioblastoma growth

11:25-11:50 Coffee Break and poster session

SESSION 3: *OMICS and Systems Biology in Cancer: Innovation in Diagnosis and Precision Medicine*

Chairs: Davide Sartini and Franca Esposito

11:50-12:05 **Silvia Garavaglia** (University of Piemonte Orientale)

Using rational structural analysis for development drugs and diagnostics tools to selective targeting human ALDH1A3 in solid tumours

12:05-12:20 **Laura Mosca** (University of Campania "Luigi Vanvitelli")

Selective anticancer effect of s-adenosylmethionine on human glioblastoma cell lines and patient- derived glioblastoma cultured cells

12:20-12:40 *Short talks*

Stefania Sardella (University of Bari)

Deciphering the secretome of tumor-associated macrophages (TAMS) upon FKBP51S silencing

Irene Gasparo (University of Messina)

Proteomics and transcriptomics functional characterization of growth hormone-secreting and non-functional pituitary adenomas

Agnese Riva (Sapienza University of Rome)

Design and biological activity of RNA molecules targeting SHMT for cancer therapy

12:40-13:00. *Sponsored Talk:*

Raffaella Macchi (Product Specialist Euroclone)

“Spatial biology advancements: discover the complexity of biological samples with single cell resolution”

13:00-14:30 Lunch and Poster session

SESSION 4: *Targeting Biochemical Pathways in Cancer Treatment: Advances and Strategies*

Chairs: Claudia Piccoli and Maria Rosa Ciriolo

14:30-14:45 **Annalisa Pecoraro** (University of Naples “Federico II”)

uL3 status influences ferroptotic cell death in p53-deleted colorectal cancer cells

14.45-15.00 Luigi Leanza (University of Padua)

Impact of transglutaminase type 2 (TG2) on cancer cell metabolism and aggressiveness

15:00-15:20 Short talks

Gaia Vanzetti (University of Turin)

AKR1C3 as a therapeutic target in the treatment of aggressive tumors, with poor prognosis and/or resistant to traditional therapies

Giovanni Pratelli (University of Palermo)

MCL1 inhibition reduces the aggressive phenotype of MDA-MB-231 cells

Licitri Laura (University of Messina)

Expression of bombesin receptor subtypes in glioma cancer and possible role as therapeutic target

SESSION 5: Chemoresistance, Tumor Microenvironment and Escape Mechanisms in Cancer

Chairs: Davide Barreca and Michela Grosso

Invited Lecture

Ferdinando Chiaradonna (University of Milan Bicocca)

“Harnessing cancer metabolism to advance therapy”

15:45-16:10 Short talks

Francesca Agostini (University of Udine)

Padi inhibition overcomes the acquisition of resistance after kras blockage in pancreatic ductal adenocarcinoma cells -.



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Katia Capitani (ISPRO)

Induction of extrachromosomal circular DNA by the apobec proteins

Marianna Scrima (Biogem Scarl)

Single-cell transcriptomic analysis of laryngeal squamous cell carcinoma exhibits heterogeneous cell states and gene expression programs in the tumor ecosystem

16:10-16:30 Award ceremony and Conclusions

Paola Chiarugi, Domenica Scumaci, Daniele Tibullo and Giovanni Li Volti

POSTER SESSION

P01. S-ADENOSYLMETHIONINE: A PROMISING CHEMOTHERAPY ADJUVANT TO SENSITIZE PROSTATE CANCER CELLS TO CABAZITAXEL.

Roberta Arpino, Francesca Cadoni, Laura Mosca, Roberta Grillo, Zahida Parveen, Giovanna Cacciapuoti, Marina Porcelli.

P02. ENZYMATIC METHIONINE STARVATION IN COLON CANCER TREATMENT: CELL DEATH MECHANISTIC STUDIES USING RECOMBINANT METHIONINE-LYASE IN COMBINATION REGIMEN.

Samanta Raboni, Serena Montalbano, Annamaria Buschini, Stefano Bettati, Simone Sidoli and Andrea Mozzarelli.

P03. FORMYL-PEPTIDE RECEPTOR 2 MODULATES SLC7A11/XCT EXPRESSION AND FUNCTION IN TUMOR CELLS.

Myrhiam Cassese, Rosario Ammendola, Vincenza Barresi, Gabriella Esposito, Fabio Cattaneo.

P04. UNTARGETED METABOLOMICS ANALYSIS OF ADRENOCORTICAL CARCINOMA CELLS TREATED WITH THE EZH2 INHIBITOR GSK126.

Fabrizio Mastrococco, Luca De Martino, Marta C. Nocito, Ivan Casaburi, Rosa Sirianni, Sergio Giannattasio and Clara Musicco.

P05. SYNERGISTIC CYTOTOXIC EFFECTS OF CAFFEIC ACID AND PARTHENOLIDE IN TRIPLE-NEGATIVE BREAST CANCER ARE CORRELATED WITH LIPID DROPLETS ACCUMULATION.

Diana Di Liberto, Giovanni Pratelli, Chiara Occhipinti, Marianna Lauricella, Antonella D'Anneo, Anna De Blasio, Daniela Carlisi.

P06. SET UP AND CHARACTERIZATION OF A COLLECTION OF PRIMARY FIBROBLASTS FROM PATIENTS WITH PTEN HAMARTOMA TUMOR SYNDROME.

Pasqualina Tessitore, Giovanni Innella, Gaia Tioli, Luca Caramanna, Daniela Turchetti, Luisa Iommarini.

P07. C/EBP- β INDUCES CHEMORESISTANCE IN NON-SMALL CELL LUNG CANCER BY RESHAPING THE IMMUNE- METABOLISM OF TUMOR MICROENVIRONMENT.

Simona Fontana, Dimas Carolina Belisario, Iris Chiara Salaroglio, Muhlis Akman, Benedetta Simoncini, Alessandro Bertero, Tatiana Chontorotzea, Luisella Righi, Maria Fedorova, Joanna Kopecka, Chiara Riganti.

P08. FKBP5 AS A NEW TARGET TO COUNTERACT MELANOMA GROWTH AND BOOST ANTITUMOR IMMUNITY.

Di Giacomo V, Marrone L, Malasomma C, Vecchione ML, Abate R, Hausch F, Romano MF, Romano S.



P09. METABOLIC INTERPLAY BETWEEN ADIPOSE-DERIVED MESENCHYMAL STEM CELL MICROENVIRONMENT AND MDA BREAST CANCER CELL LINE.

Francesca Landini, C. Pacelli, F. Agriesti, T. Tataranni, V. Ruggieri, P. Formisano, N. Capitanio, C. Piccoli.

P10. ANTITUMORAL ACTIVITY OF S-ADENOSYLMETHIONINE IN PROSTATE CANCER CELLS IS MEDIATED BY THE UPREGULATION OF THE TUMOR SUPPRESSOR miR-34a.

Roberta Grillo, Laura Mosca, Francesca Cadoni, Roberta Arpino, Yasin Tayyaba, Giovanna Cacciapuoti and Marina Porcelli.

P11. INHIBITORS OF NICOTINAMIDE N-METHYLTRANSFERASE AS TOOLS FOR CANCER TREATMENT: EFFECT ON CELL PROLIFERATION, APOPTOSIS, OXIDATIVE STRESS AND CHEMOSENSITIVITY.

Emma Nicol Serritelli, Veronica Pompei, Matthijs J. Van Haren, Nathaniel I. Martin, Davide Sartini, Monica Emanuelli.

P12. OMICS-BASED MECHANISTIC INSIGHTS INTO THE PRO-LEUKEMIC ROLE OF GATA-1S IN MYELOID CELLS.

Silvia Trombetti, Rosa Catapano, Raffaele Sessa, Paola Izzo, Sante Roperto and Michela Grosso.

P13. IRAK1: A NEW BIOMARKER OF CHEMO-IMMUNO- RESISTANCE IN NON-SMALL CELL LUNG CANCER, A THERAPEUTIC TARGET THAT RESHAPES TUMOR MICROENVIRONMENT.

Sabrina Digiovanni, Iris Chiara Salaroglio, Claudia Giannotta, Sushant Parab, Luca Alessandri, Gabriella Doronzo, Joanna Kopecka, Massimo Massaia, Luisella Righi, Silvia Novello, Stefano Guglielmo, Giorgio Vittorio Scagliotti, Raffaele Calogero, Federico Bussolino, Chiara Riganti.

P14. HEXOSAMINE BIOSYNTHETIC PATHWAY INHIBITION COOPERATES WITH GEMCITABINE INDUCING IN VITRO AND IN VIVO PANCREATIC CANCER REGRESSION BY ENHANCING DNA DAMAGE.

Barbara Zerbato, Virginia Brancato, Marina La Chimia, Maximilian Gobbi, Chiara Lattuada, Alex Pessina, Luca Brambilla, Andre Wegner, Domanica Scumaci, and Ferdinando Chiaradonna.

P15. BREAST CANCER: A PROTEOMIC STUDY TO SHED LIGHT ON RELATIONSHIP BETWEEN METABOLIC REWIRING AND EPIGENETIC.

Marina La Chimia, Cristina Fontana, Barbara Zerbato, Chiara Bruno, Francesca Ambrosio, Giosuè Costa, Valter Agosti, Giovanni Cuda, Ferdinando Chiaradonna, Domenica Scumaci.

P16. REPURPOSING OF ANTIPSYCHOTIC NEFAZODONE FOR CANCER THERAPY TARGETING MITOCHONDRIAL METABOLISM.

Marco Varalda, Chaitanya Reddy Kankara, Vito Marstrorocco, Annamaria Antona, Jacopo Venetucci, Silvia Cracas, Giulia Garro, Simone Reano, Nicoletta Filigheddu, Daniela Capello.

P17. THE CATIONIC AMPHIPHILIC DRUG PENFLURIDOL DISPLAYS CYTOTOXICITY IN BREAST CANCER CELLS BY INDUCING MITOCHONDRIAL DAMAGE AND ACTIVATING THE ENDOPLASMIC RETICULUM STRESS RESPONSE.

Annamaria Antona, Bisrat Bekele, Jacopo Venetucci, Marco Varalda, Giulia Garro, Silvia Vittoria Cracas, Simone Reano, Nicoletta Filigheddu, Marcello Manfredi, Daniela Capello.

P18. PROTEOMICS STRATEGIES TO DISCLOSE BRCA1-MUTATED BREAST CANCER PHENOTYPE: FUNCTIONAL AND METABOLIC IMPLICATIONS.

Marina La Chimia, Cristina Fontana, Chiara Bruno, Mariateresa De Angelis, Valter Agosti, Ferdinando Chiaradonna, Giovanni Cuda, Domenica Scumaci.

P19. TERMINAL DIFFERENTIATION IS INDUCED BY A FLAVONOID-RICH EXTRACT OF BERGAMOT JUICE IN THP-1 CELLS.

Alessandro Maugeri, Laura Musumeci, Caterina Russo and Michele Navarra.

P20. THE TWOFACED ROLE OF SYNDESMOS: RIBOREGULATION OF THE DNA DAMAGE RESPONSE.

M.Auriemma, S. De Lella, R. Avolio, F. Esposito, D.S. Matassa.

P21. TUNING THE B-CLL MICROENVIRONMENT: EVIDENCE FOR BAG3 PROTEIN-MEDIATED REGULATION OF STROMAL FIBROBLASTS ACTIVITY.

Anna Basile, Valentina Giudice, Laura Mettavier, Antonia Falco, Carmine Selleri, Margot De Marco, Maria Caterina Turco, Liberato Marzullo, Alessandra Rosati.

P22. ROLE OF TRANSCRIPTION FACTOR EB (TFEB) IN INFLAMMATION AND CANCER METASTASIS.

Sara Pastorello, Elisa Setten, Federico Bussolino.

P23. MYTHOCHONDRIAL DISFUNCTION AND MMPS-INDUCED ECM REMODELING IN ASTROCYTOMA MODEL EXPOSED TO NUTRACEUTICAL BASED ON CHESTNUT TANNINS AND CAROB FRUIT.

Alfonsina La Mantia, Irina Naletova, Marianna FloraTomasello, Rosaria Acquaviva, Simone Bianchi, Claudia Di Giacomo and BarbaraTomasello.

P24. *Brassica oleracea* VAR. *Italica*-MYROSINASE BLEND REGULATES THE PRODUCTION OF PRO-ANGIOGENIC FACTORS BY FIBROBLAST CELLS SUPPRESSING NEO- ANGIOGENESIS IN HUVEC CELLS.

Tomasello Barbara, Naletova Irina, Malfa Giuseppe Antonio, Attanasio Francesco, Bonucci Massimo, La Mantia Alfonsina, Di Giacomo Claudia.



P25. ADVANCING CANCER GENOMICS: NOVEL APPLICATIONS OF NANOPORE SEQUENCING IN PLASMA CELL-FREE DNA ANALYSIS.

Umberto Greco, Filippo Martignano, Caterina Baccioni, Serena Pillozzi, Lorenzo Antonuzzo, Efrat Katsman, Shari Orlanski, Ilana Fox-Fisher, Ruth Shemer, Yuval Dor, Aviad Zick, Amir Eden, Iacopo Petrini, Ben Berman, and Silvestro G. Conticello.

P26. MOLECULAR KILLERS: EXPLOITING CELL DEATH FROM THE INSIDE.

Flavia Di Re, Serena Vetri, Maria De Angioletti, Francesca Mari, and Silvestro G. Conticello.

P27. NOVEL CD44-TARGETED NANOPARTICLES: AN INNOVATIVE APPROACH TO IMPROVED DRUG DELIVERY BREAST CANCER TREATMENT.

Eugenia Nicol Manti, Manuela Curcio, Luca Frattaruolo, Giuseppe Cirillo, Francesca Iemma, Anna Rita Cappello and Marco Fiorillo.

P28. INHIBITION OF CDK-7 AS A THERAPEUTIC STRATEGY IN BREAST CARCINOMA: EFFECTS OF YKL-5-124.

Manuela Murano, Luca Frattaruolo, Maria Eugenia Gallo Cantafio, Vincenza Dolce, Anna Rita Cappello, Nicola Amodio and Marco Fiorillo.

P29. THE MODULATION OF THE ER- MITOCHONDRIA TETHER GRP75 REGULATES MELANOMA CANCER CELL AGGRESSIVENESS.

Filippo Severin, Elisabetta Zaltron, Ilaria Celotti, Alessia Ruzza, Federica Vianello, Matteo Scavezzone, Alberta Palazzo, Valentina Brillo and Luigi Leanza.

P30. ROLE OF VOLUME-REGULATED ANION CHANNELS (VRAC) IN BREAST CANCER

Alessandro Paoli, Soha Sadeghi, Veronica Carpanese, Giulia Battistello, Vanessa Checchetto.

P31. ROLE OF LYSOSOMES IN CANCER DEVELOPMENT AND CHEMORESISTANCE.

Serena Castelli, Angela de Cristofaro, Loredana Cifaldi, Raffaele Strippoli, Enrico Desideri, Maria Rosa Ciriolo.

P32. INNOVATIVE ANTI-CANCER BISMUTH-BASED MOF FOR DRUG DELIVERY

Paratore Vincenzo, Alessandro Giuseppe Furneri, Aleksandra Agafonova, Carmelina Daniela Anfuso, Gabriella Lupo, Venera Cardile, Guglielmo Guido Condorelli and Maria Teresa Cambria

P33. HYPOXIA-INDUCED INFLAMMATION IN IN VITRO MODEL OF HUMAN BLOOD-BRAIN BARRIER: MODULATORY EFFECTS OF OLFACTORY ENSHEATHING CELL-CONDITIONED MEDIUM.

Aleksandra Agafonova, Alessia Cosentino, Nicola Musso, Chiara Prinzi, Maria Teresa Cambria, Rosalia Pellitteri, Gabriella Lupo, and Carmelina Daniela Anfuso.

P34. RELATIONSHIP BETWEEN ELECTROROTATION SPECTRUM AND MEMBRANE ASSOCIATED REGION1 BINDING PROTEIN (SMAR1) AND FOCAL ADHESION KINASE (FAK) GENE EXPRESSION.

Paolo Giuseppe Bonacci, Samuele Moscato, Massimo Camarda, Maide Bucolo, Stefania Stefani and Nicolò Musso.



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P35. DYNAMIC REGULATION OF GLUCOSE TRANSPORTER EXPRESSION IN COLORECTAL CELL LINES: A PROOF OF CONCEPT FOR TUMOR TARGETING STRATEGIES VIA NANOPARTICLES DELIVERY.

Paolo Giuseppe Bonacci, Ludovica Maugeri, Riccardo Vinciguerra, Salvatore Petralia, Stefania Stefani and Nicolò Musso.

