



# THE 4TH ANNUAL MEETING OF THE INTERNATIONAL SOCIETY OF PROTON DYNAMICS IN CANCER (ISPDC)

October 10-12, 2013



## CONGRESS PROGRAM

Thursday, 10 October

8:15 – 8:45	<b>Registration</b>
8:45 – 9:00	<b>Welcome address</b>
<b>I.</b>	<b>Biophysics of pH</b> <i>Chairman: Cyril Rauch (Nottingham, UK)</i>
9:00 – 9:30	<b>1. Morphology of melanocytic lesions <i>in situ</i></b> Martine Ben Amar (Paris, France)
9:30 – 9:50	<b>2. Glucose metabolism and variations in energetic demand: A new look at Pasteur and Warburg</b> Tamir Epstein (Ann Arbor, USA)
9:50 – 10:10	<b>3. The Na<sup>+</sup>/H<sup>+</sup> exchangers of intracellular compartments: Proton leaks or loading mechanisms?</b> Laurent Counillon (Nice, France)
10:10 – 10:30	<b>4. Low pH-mediated thermal motion in cancer.</b> Cyril Rauch (Nottingham, United Kingdom)
10:30 – 10:40	<b>5. Extracellular reactive oxygen and nitrogen species of malignant cells: Control of multistep oncogenesis and therapeutic chance.</b> Georg Bauer (Freiburg, Germany)
10:40 – 10:45	<b>6. Discussion</b>
10:45 – 11:15	<b>Refreshments</b>
<b>II.</b>	<b>Membrane transporter in intracellular and extracellular pH-control</b> <i>Chairman: Pierre Sonveaux (Brussels, Belgium)</i>
11:15 – 11:50	<b>1. <i>Key-note lecture</i>: Monocarboxylate transporters (MCTs): structure, roles, regulation and potential as therapeutic targets</b> Andrew Halestrap (Bristol, UK)
11:50 – 12:10	<b>2. Antitumor activity of 7-aminocarboxycoumarin derivatives, a new class of potent inhibitors of lactate influx but not efflux.</b> Olivier Feron (Brussels, Belgium)
12:10 – 12:30	<b>3. Significance of monocarboxylate transporter (MCT) expression in human tumors</b> Fatima Baltazar (Minho, Portugal)
12:30 – 12:45	<b>4. Genetic disruption of CD147/ Basigin, a subunit of lactate-H<sup>+</sup> symporters (MCTs) sensitizes glycolytic tumor cells to phenformin</b> Ibtissam Marchiq (Nice, France)
12:45 – 12:55	<b>5. Characterization of 3-bromopyruvate uptake in breast cancer cells</b> J. Azevedo-Silva
12:55 – 13:00	<b>6. Discussion</b>
13:00 – 14:00	<b>Lunch</b>

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14:00 – 15:00	<b>Coffee and posters Board Meeting</b>
<b>III.</b>	<b>pH, cell signalling and growth</b> <i>Chairman: Jacques Pouyssegur (Nice, France)</i>
15:00 – 15:35	<b>1. <i>Key-note lecture:</i> CA IX role in pH regulation and signaling in cancer - a subcellular context-related view</b> Silvia Pastorekova (Bratislava, Slovakia)
15:35 – 15:55	<b>2. Interaction of carbonic anhydrases with lactate-transporting MCTs</b> Joachim Deitmer (Kaiserslautern, Germany)
15:55 – 16:05	<b>3. Carbonic anhydrase II enhances activity of monocarboxylate transporters via direct interaction</b> Holger Becker (Kaiserslautern, Germany)
16:05 – 16:15	<b>4. Glucose deprivation increases monocarboxylate transporter 1 (MCT1) expression and MCT1-dependent tumor cell migration</b> Paolo E. Porporato (Brussels, Belgium)
16:15 – 16:25	<b>5. Molecular mechanisms and binding partners controlling expression, localization and function of the Na<sup>+</sup>/HCO<sub>3</sub><sup>-</sup> cotransporter NBCn1 in cancer</b> Stine Pedersen (Copenhagen, Denmark)
16:25 - 16:35	<b>6. Why does disrupting pH<sub>i</sub> regulating systems fail to kill tumour cells?</b> Jacques Pouyssegur (Nice, France)
16:35 – 16:40	<b>7. Discussion</b>
16:40 – 17:00	<b>Refreshments</b>
<b>IV.</b>	<b>pH and energy metabolism</b> <i>Chairman: Angela Otto (Munich, Germany)</i>
17:00 – 17:30	<b>1. <i>Key-note lecture:</i> The pathophysiology of the tumor microenvironment: Coping with hostile conditions and spatio-temporal heterogeneities</b> Peter Vaupel (Mainz, Germany)
17:30 - 17:50	<b>2. Hypoxia promotes tumour cell survival during acidosis through maintenance of cellular energy</b> Scott Parks (Nice, France)
17:50 -18:10	<b>3. A mitochondrial switch promotes tumor metastasis</b> Pierre Sonveaux (Brussels, Belgium)
18:10 – 18:20	<b>4. Evaluation of the role of pH in cancer cell proliferation</b> Ujjal Bose (Manipal, India)
18:20 -- 18:30	<b>5. Extracellular pH, lactate, and a hypothesis for NADH-associated proton dynamics in tumor cells</b> Angela Otto (Munich, Germany)
18:30 – 20:00	<b>Welcome reception on site</b>

**Friday, 11 October**

<p><b>v.</b> <span style="margin-left: 100px;"><b>pH control of cell survival</b></span> <i>Chairmen: Sofia Avnet (Bologna, Italy)</i></p>	
9:00 – 9:30	<p><b>1. CO<sub>2</sub> venting in tumour-growths: is it rate-limited by membranes?</b> Pawel Swietach (Oxford, UK)</p>
9:30 – 9:00	<p><b>2. Importance of lysosomal acidity during cisplatin-induced cell death in squamous cell carcinomas of the head and neck</b> Karin Öllinger (Linköping, Sweden)</p>
9:00 – 10:15	<p><b>3. LDHB regulates autophagy-dependent tumor cell proliferation</b> Lucie Brisson (Brussels, Belgium)</p>
10:15 – 10:30	<p><b>4. The acidic tumor pH neutralizes the autophagy inhibiting activity of chloroquine: implications for cancer therapies</b> Paola Pellegrini (Stockholm, Sweden)</p>
10:30 – 10:40	<p><b>5. TM9SF4 interacts with V-ATPase and regulates tumor pH alterations associated with drug resistance and invasiveness of colon cancer cells</b> Francesco Lozupone (Rome, Italy)</p>
10:40 - 10:45	<p><b>6. Discussion</b></p>
10:45 – 11:15	<p><b>Refreshments</b></p>
<p><b>vi.</b> <span style="margin-left: 100px;"><b>pH control of immune functions and tumor cell plasticity</b></span> <i>Chairmen: Angelo de Milito (Stockholm, Sweden)</i></p>	
11:15 – 11:45	<p><b>1. Lactic acid and low pH suppress immune cell function</b> Marina Kreutz (Regensburg, Germany)</p>
11:45 – 12:00	<p><b>2. Impact of glycolytic inhibition on human T cell function</b> Kathrin Renner (Regensburg, Germany)</p>
12:00 – 12:20	<p><b>3. Increased expression of V-ATPase V0c is a specific marker and target for cancer stem cells in human rhabdomyosarcoma</b> Sofia Avnet (Bologna, Italy)</p>
12:20 – 12:35	<p><b>4. Autophagy and cancer stem cells or Tumor-initiating Cells in Human Breast Cancer</b> Ahmed Hamai (Paris, France)</p>
12:35 – 12:50	<p><b>5. Adaptation to acidic extracellular pH induces epithelial-mesenchymal transition as stable phenotype in Lewis lung carcinoma model</b> Yasumasa Kato (Koriyama, Japan)</p>
12:50 – 13:00	<p><b>6. Discussion</b></p>
13:00 – 14:00	<p><b>Lunch</b></p>
14:00 – 15:00	<p><b>Coffee and posters</b></p>

**Friday, 11 October**

VII	
<b>pH and stroma-tumor interactions, metastasis</b>	
<i>Chairmen: Steve Reshkin (Bari, Italy), Christian Stock (Münster, Germany)</i>	
15:00 - 15:35	<b>1. Acid-base compartmentalization in malignant tumors: role of membrane transporters and the tumor microenvironment for cancer development</b> Ebbe Boedtkjer (Aarhus, Denmark)
15:35 – 15:55	<b>2. NHE1 and Membrane Remodelling: What Role for Cancer Cell Death/Survival Regulation?</b> Dominique Lagadic-Gossmann (Rennes, France)
15:55 – 16:15	<b>3. Acidic priming enhances metastatic potential of prostate cancer cells in vivo and in vitro</b> Anne Riemann (Halle, Germany)
16:15 – 16:25	<b>4. NaV1.5 sodium channels increase breast cancer cell invadopodial activity by both controlling Src kinase-dependent F-actin polymerization and promoting NHE-1-dependent proton efflux and extracellular matrix digestion</b> Sebastian Roger (Tours, France)
16:25 – 16:35	<b>5. The Na<sup>+</sup>/H<sup>+</sup> exchanger (NHE1) is an essential component of the EGFR pathway in pancreatic ductal adenocarcinoma (PDAC) and is a new target for combination therapy</b> Stephan Reshkin (Bari, Italy)
16:35 – 16:45	<b>6. Discussion</b>
16:45 – 17:00	<b>The Otto Warburg Foundation</b> Antonio Chiesi
17:00 – 17:15	Refreshments
17:15 – 19:00	<b>Society matters – members meeting</b>
20:00	<b>Symposium Dinner in central Munich</b>

**Saturday, 12 October**

VIII.		<b>Metabolic imaging</b>
		<i>Chairman: Rolf Schulte (Munich, Germany)</i>
9:00 – 9:35	<b>1. <i>Key-note lecture: Seeing pH with NMR: Carbonic Anhydrase IX as the pHstat that Sets Tumour Extracellular pH</i></b> John Griffith (Cambridge, UK)	
9:35 – 9:55	<b>2. <i>MRI probes for in vivo pH mapping</i></b> Silvio Aime (Turin, Italy)	
9:55 – 10:15	<b>3. <i>Heterogeneity of Intracellular and Extracellular Tumor pH: a Novel Approach Enabling Simultaneous Multiparametric Tissue pH Analysis</i></b> Norbert Lutz (Marseille, France)	
10:15 – 10:30	<b>4. <i>Separation of intra- and extracellular hyperpolarized <sup>13</sup>C- metabolites in-vivo</i></b> Franz Schilling (Munich, Germany)	
10:30 – 10:40	<b>5. <i>Quantified pH imaging with hyperpolarized <sup>13</sup>C-Bicarbonate</i></b> Johannes Scholz (Munich, Germany)	
10:40 – 10:45	<b>6. <i>Discussion</i></b>	
10:45 – 11:15	<b>Refreshments</b>	
IX.		<b>Acidity as a target for antitumor therapy</b>
		<i>Chairman: Stefano Fais (Rome, Italy)</i>
11:15 – 11:35	<b>1. <i>High Dose Proton Pump Inhibitor (PPI) in Association with First Line Chemotherapy Improves Overall Survival in Patients with Metastatic Cancer</i></b> Xichun Hu (Shanghai, China)	
11:35 – 11:55	<b>2. <i>Proton pump inhibitors as anti vacuolar-ATPases drugs: preliminary findings in companion animals with spontaneous neoplasms treated with metronomic chemotherapy</i></b> Enrico Spugnini (Rome, Italy)	
11:55 – 12:15	<b>3. <i>New and powerful NHE1 inhibitors as potential anticancer drugs in bedside oncology: a prospective program of preclinical studies</i></b> Salvador Harguindey (Vitoria, Spain)	
12:15 – 12:25	<b>4. <i>The use of CA-IX as a diagnostic method for oral leukoplakia</i></b> Mario Pérez-Sayáns (Santiago de Compostela, Spain)	
12:25 – 12:35	<b>5. <i>Hydrogen membrane transport activity coupled with changing deuterium/hydrogen ratio may be a key proliferation signal for the cells</i></b> Gabor Somlyai (Budapest, Hungary)	
12:35 – 12:45	<b>6. <i>Exercise Training, tumour metabolism, tumour–host interaction and lactate shuttle theory</i></b> Peter Hofmann (Graz, Austria)	
12: 45 – 13:00	<b>7. <i>Discussion</i></b>	
13:00	<b>Farewell</b>	

Session	Authors	Title
P I.1	Cherkaoui Rbati, M. H., Paine, S.W., Littlewood, P., Rauch, C.	Warburg effect mediates differential distribution of anticancer drugs in tumors
P II.1	Draoui, N., Schicke, O., Fernandez, A., Drozak, X., Nahra, F., Seront, E., Bouzin, C., Marchand, A., Chaltin, P., Sonveaux, P., Riant, O., Feron, O.	Development of new inhibitors of lactate transporters: from the in vitro screening procedure to the in vivo validation of the therapeutic strategy.
P II.2	Payen, V. L., Porporato, P.E., De Saedeleer, C.J., Pr�at, V., Feron, O., Sonveaux, P.	Lactate stimulates angiogenesis, prevents ischemic skeletal muscle atrophy and accelerates wound healing
P III.1	P�rez-Escuredo, J. , Dadhich, R. K. , Dhup, S., Porporato, P.E., Sonveaux, P.	Lactate triggers c-Myc expression and activity in normoxic tumor cells
P IV.1	<u>Jamali, S.</u> , Barros, L.F., Deitmer, J.W., Becker, H.M.	Effect of hypoxia on H <sup>+</sup> /lactate transport in the human breast cancer cell line MCF-7
P IV.2	Valente, Diana , F�tima Baltazar, Roxana Moreira, and Od�lia Queir�s	Exploiting cell metabolism in cancer therapy: Effect of bioenergetic modulators on tumor cell characteristics
P II.3	Copetti, T., De Saedeleer, C.J., V�gran, F., Verrax, J., Kennedy, K.M., Moon, E.J., Dhup, S., Danhier, P., Fr�rart, F., Gallez, B., Ribeiro, A., Michiels, C., Dewhirst, M.W., Feron, O., Sonveaux, P.	Targeting the lactate transporter MCT1 in endothelial cells inhibits lactate-induced angiogenesis
P VI.1	Gottfried, E., Lang, S.A., Andreesen, R., Herr, W., Kreutz, M.	Low pH increases the anti-proliferative capacity of NSAIDs
P VI.2	Loffredo, R., Lulli, M., Witort, E., Granucci, I., Di Gesualdo F., Amedei, A., Lapucci, A., Capaccioli, S.	Impact of acidosis on $\zeta$ -Crystallin-mediated bcl-2 expression in ALL T-cell lines
P VI.3	Peppicelli, S., Bianchini, F., Calorini, L.	Acidity and mesenchymal stem cells as a new liaison in human melanoma malignancy
P VII.3	Antelmi, E., Rubino, R., Cardone, R.A., Greco, M.R., Di Sole, F., Casavola, V., Carcangiu, M., and Reshkin, S.J.	Beta1 Integrin Binding Phosphorylates Ezrin and NHERF1 to activate a lipid raft NHE1 signalsome and drive invadopodia activity and invasion
P VII.2	Csaderova, L., Debreova, M., Radvak, P., Stano, M., Vrestiakova, M., Kopacek, J., Pastorekova, S., <u>Svastova, E.</u>	Beyond pH regulation: A role of CA IX in focal adhesion during cell spreading and movement

<b>P VII.1</b>	Ludwig, F. T. , Wälte, M., Frontzek, F., Sargin, S. , Schillers, H. , Oberleithner, H. , Schwab, A., Stock, C.	Is the sodium/proton exchanger NHE1 a regulator of cell-cell adhesion?
<b>P VIII.1</b>	Brischwein, M., Kleinhans, R., Haas, M., Wolf, B.	Sensor Monitoring of organotypic human tumor short term cultures may reveal profiles of metabolism and chemo-sensitivity
<b>P VIII.2</b>	Clauss, J., Brischwein, M., Wolf, B.	Implantable Microdevices for Monitoring and Feed-Back Intervention with Respect to the Tumor Microenvironment: A Feasibility Study
<b>P IX.2</b>	Pellegrini, P. , Lundbäck, T. , Haraldsson, M., Jenmalm Jensen, A. , Linder, S. , De Milito, A.	A drug-screening model to identify compounds active in cells under metabolic stress
<b>P IX.1</b>	Klameth, L., Svoboda, M., Thalhammer, T., Olszewski, U., Hamilton, G.	Effects of chemotherapeutics on expression of cellular pH regulators in small cell lung cancer (SCLC) cell lines.
<b>P IX.3</b>	Ulm, Christina, Weiß, Gabriele	Extracellular Matrix and Ground Regulation: The importance of pH from alternative medicinal point of view
<b>P IX.4</b>	Dong, J., Zeniou, M., Fève, M., Gistavo Dubois, Marie-Pierre Junier, Chneiweiss, H. , Haiech, J., Kilhoffer, M. C.	Specific activity of bisacodyl on glioblastoma stem cells survival under acidic conditions