





# 14<sup>th</sup> Annual Symposium On The Cannabinoids

Including a One-day Monothematic Meeting of the Società Italiana di  
Farmacologia on “New Advances in Endocannabinoid Research”



## 2004 Program

Wednesday June 23<sup>rd</sup>

|   |  |  |   |
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| 0700  | <b>Breakfast</b>   |  |    |
| 0800  | <b>OPENING REMARKS</b>   |  |   |
| <b>Chemical and Structure Activity Relationship Studies on Proteins of the Endocannabinoid System</b> |  |  |   |
| ➤Chairs: P. Reggio / M. Mor   |  |  |   |
| 0815  | Thomas, B.F., Fix, S., Gilliam, A.F., Bracken M., Myers, J., Pertwee, R.G., and Seltzman, H.H.   | Structure -Activity Relationships for Bivalent Cannabinoid Ligands   | 1   |
| 0830  | Reggio, P., Umijiego, U., Hurst, D., Seltzman, H.H., Hyatt, S., Roche, M., McAllister, S., Fleischer, D., Abood, M., Shi, S., Jones, J., and Lewis, D. | Hydrogen Bonding of the SR141716 C-3 Carboxamide Oxygen with K3.28 is Crucial for its Inverse Agonism  | 2   |
| 0845  | Huffman, J. W., Joshi, S.N., Bushell, S.M., Wiley, J.L., and Martin, B.R.  | 2'-Methylalkyl-1-Methoxy-, and 1-Deoxy- $\Delta^8$ -Tetrahydrocannabinols: Effect of Stereochemistry and Chain Length Upon CB <sub>1</sub> and CB <sub>2</sub> Receptor Affinity | 3   |
| 0900  | Mahadevan, A., Bourne, C., Roy, S., Wiley, J.L., Martin, B.R., and Razdan, R.K.  | Novel, Potent THC / Anandamide (Hybrid) Analogs  | 4   |
| 0915  | Lu, D., Fan, P., and Makriyannis, A.   | Diterpene Cannabinoids   | 5   |
| 0930  | Pertwee, R.G., Thomas, A., Stevenson, L.A., and Mechoulam, R.  | (-)-7-Hydroxy-4'-Dimethylheptyl-Cannabidiol Activates a Non-CB <sub>1</sub> , Non-CB <sub>2</sub> , Non-TRPV1 Target in the Mouse Vas Deferens in a Cannabidiol-Sensitive Manner | 6   |
| 0945  | Mor, M., Rivara, S., Lodola, A., Plazzi, P.V., Tarzia, G., Duranti, A., Tontini, A., Piersanti, G., Kathuria, S., and Piomelli, D.                     | Structure-Activity Relationships of Alkylcarbamic Acid Aryl Esters as Fatty Acid Amide Hydrolase Inhibitors  | 7   |
| 1000  | Tsuboi, K., Hilligsmann, H., Vandevoorde, S., Lambert, D.M., and Ueda, N.  | Characterization of N-Palmitoylethanolamine-Hydrolyzing Acid Amidase and Development of its Inhibitors   | 8   |
| 1015-1045   | <b>Coffee</b>  |  |  |
| <b>Regulation of Endocannabinoid Levels: Biosynthesis and Inactivation</b>                            |  |  |   |
| ➤Chairs: B. Cravatt / N. Ueda   |  |  |   |
| 1045  | Okamoto, Y., Morishita, J., Tsuboi, K., Tonai, T., and Ueda, N.  | Molecular Cloning and Characterization of N-Acylphosphatidylethanolamine-Hydrolyzing Phospholipase D (NAPE-PLD)  | 9   |

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| 1100  | Bisogno, T., Howell, F., Williams, G., Minassi, A. Cascio, M.G., Ligresti, A., Williams, E-J., Hobbs, C., Doherty, P., and Di Marzo, V. | Characterization of SN-1-Diacylglycerol Lipases as 2-AG/Endocannabinoid Biosynthesizing Enzymes  | 10  |
| 1115  | Hu, S-J., Chen, J., Minassi, A., Roskoski, Jr., R., Di Marzo, V., and Walker, J.M.  | Studies of the Biosynthesis of N-Arachidonoyl Dopamine (NADA)  | 11  |
| 1130  | Sugiura, T., Oka, S., Gokoh, M., Kishimoto, S., and Waku, K.  | 2-Arachidonoylglycerol as a Novel Mediator of Inflammation   | 12  |
| 1145  | Cravatt, B.F., Saghatelian, A., Hawkins, E.G., Clement, A.B., Bracey, M.H., and Lichtman, A.H.  | Functional Disassociation of the Central and Peripheral Fatty Acid Amide Signaling Systems   | 13  |
| 1200  | Maccarrone, M., Bari, M., Battista, N., Argirò, G., Finazzi-Agrò, A., Calabresi, P., and Cupini, L.M.                                   | Anandamide Degradation in Headache Patients  | 14  |
| 1215  | Vandevoorde, S., Lavand'homme, P., Fowler, C.J., Tsuboi, K., Ueda, N., Rozenberg, R., Habib Jiwani, J-L., and Lambert, D.M.             | Oleylethylamide, an Analgesic FAAH Inhibitor which Modulates Endogenous Anandamide, Oleylethanolamide and 2-Arachidonoylglycerol Levels in the Brain | 15  |
| 1230-1430   | <b>Lunch</b>  |  |    |
| 1430-1700   | <b>Poster Session</b>   |  | 96-138  |
| <b>Cannabinoid Receptor Structure, Regulation and Signal Transduction</b> |   |  |   |
| ➤Chairs: <i>A. Howlett / T. Rubino</i>                                    |   |  |   |
| 1700  | Kearn, C.S., Mackie, K., and Glass, M.  | Physical Interactions of CB <sub>1</sub> Cannabinoid and D2 Dopamine Receptors   | 16  |
| 1715  | McDonald, N., Connolly, C., and Irving, A.  | Generation of a N-Terminal CB <sub>1</sub> -EGFP Chimera to Study Cannabinoid Receptor Trafficking   | 17  |
| 1730  | Niehaus, J.L., Wallis, K.T., Liu, Y., Bhartur, S.G., Elphick, M.R., and Lewis, D.L.   | CRIP1a and CRIP1b: Novel CB <sub>1</sub> Cannabinoid Receptor Interacting Proteins   | 18  |
| 1745  | Elphick, M.R., Wallis, K.T., Liu, Y., Lewis, D.L., and Egertová, M.   | Localization of the CB <sub>1</sub> Cannabinoid Receptor Interacting Protein CRIP1a in the Brain   | 19  |
| 1800  | Xie, X.Q., J. Zhao, J., Chen, J.-Z. and Zheng, H.-A.  | CB <sub>2</sub> Receptor: Protein NMR from Building Blocks to 3D Structure   | 20  |
| 1815  | Breivogel, C.   | Beta-Arrestin 2 Affects Cannabinoid Sensitivity to Tetrahydrocannabinol  | 21  |
| 1830  | Rubino, T., Viganò, D., and Parolaro, D.  | Cannabinoid Receptor Signaling in Ras-GRF1 Knock Out Mice  | 22  |
| 1845  | Rao, G.K., and Kaminski, N.E.   | $\Delta^9$ -Tetrahydrocannabinol ( $\Delta^9$ -THC) Elicits a Store-Independent Calcium Elevation in T Cells   | 23  |
| 1900-2030   | <b>Break</b>  |  |   |
| 2030  | <b>Dinner</b>   |  |  |


# Thursday June 24<sup>th</sup>

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| 0700  | <b>Breakfast</b>  |  |    |
| <b>Vanilloid Receptors</b>                      |   |  |   |
| ➤ <i>Chairs: G. Appendino / V. Di Marzo</i>     |   |  |   |
| 0815  | Sala, M., Pegorini, S., Guerini-Rocco, C., Verzoni, C., Iosue', S., and Braida, D.                            | Capsaicin Exhibits Neuroprotective Effects via Vanilloid Receptor Type 1 (VR <sub>1</sub> ) Activation in a Model of Transient Global Cerebral Ischemia in Mongolian Gerbils | 24  |
| 0830  | Costa, B., Giagnoni, G., Trovato, A.E., Franke, C., and Mariapia, C.  | Efficacy of Cannabidiol in a Rat Model of Neuropathic Pain: Evidence for VR <sub>1</sub> -Mediated Anti-Hyperalgesic Effect  | 25  |
| 0845  | van der Stelt, Trevisani, M.M., De Petrocellis, L., Moriello, A.S., Campi, B., Geppetti, P., and Di Marzo, V. | Intracellular Anandamide Mediates Store-Operated Calcium Entry by Acting at TRPV1 Channels in Neurons  | 26  |
| <b>Evolution of the Endocannabinoid System</b>  |   |  |   |
| ➤ <i>Chairs: J.M. McPartland / M. Elphick</i>   |   |  |   |
| 0900  | McPartland, J.M., and Guy, G.W.   | Numbers with Wings: The Calculus of CB Receptor Evolution  | 27  |
| 0915  | Matias, I., Villani, G., and Di Marzo, V.   | Occurrence and Biological Role of the Endocannabinoid System in Ciona Intestinalis   | 28  |
| 0930  | Soderstrom, K., Tian, Q., Valenti, M., and Di Marzo, V.   | Endocannabinoids Link Feeding State and Auditory Perception-Related Gene Expression  | 29  |
| <b>Memory and Cognition</b>                     |   |  |   |
| ➤ <i>Chairs: P. Fadda / B. Lutz</i>             |   |  |   |
| 0945  | Varvel, S.A., Stokes, R., Niyuhire, F., and Lichtman, A.H.  | Further Evidence for a Role of the Endocannabinoid System in Extinction Processes  | 30  |
| 1000  | Cannich, A., Wotjak, C., Lutz, B., and Marsicano, G.  | Altered Phosphorylation Levels in the Brain of Cannabinoid Receptor-1 Deficient Mice after Extinction Training   | 31  |
| 1015  | Fadda, P., Robinson, L., Fratta, W., Pertwee, R.G., and Riedel, G.  | Effects of $\Delta^9$ -THC and CBD-Rich Cannabis Extracts on Latent Learning in Rats   | 32  |
| 1030  | Allison, C., Brett, R., and Pratt, J.   | Deficits in an Attentional Set Shift Task Induced by Repeated Low Dose THC in Rats   | 33  |
| 1045-1100                                       | <b>Quick Coffee</b>   |  |  |
| 1100-1415                                       | <b>Visit to Temples</b>   | <b>Box Lunch Provided</b>  |   |
| 1415-1615                                       | <b>Poster Session</b>   |  | 139-161   |
| <b>Neuromodulatory Role of Endocannabinoids</b> |   |  |   |
| ➤ <i>Chairs: B. Szabo / M. Melis</i>            |   |  |   |
| 1615  | Levine, E.S., Trettel, J., and Fortin, D.A.   | Physiological Role of Endocannabinoids in the Neocortex  | 34  |

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|------|---|--|----|
| 1630 | Deadwyler, S.A., Zhuang, S.Y., Weiner, J., and Hampson, R.E.  | Criteria for Release of Endocannabinoids by Hippocampal Cellular Activity  | 35 |
| 1645 | Melis, M., Pistis, M., Perra, S., Muntoni, A.L., Pillolla, G., Minassi, A., Di Marzo, V., and Gessa, G.L. | Endocannabinoids Mediate Retrograde Signalling at Excitatory and Inhibitory Synapses in the Rat Ventral Tegmental Area   | 36 |
| 1700 | Riegel, A.C., and Lupica, C.R.  | S <sub>k</sub> Ion Channels and Metabotropic Glutamate Autoreceptors Control Endocannabinoid Release from Dopamine Neurons in the Ventral Tegmental Area (VTA) | 37 |
| 1715 | Shivachar, A.   | Cannabinoids Inhibit Excitatory Amino Acid Transport in Cultured Rat Cortical Astrocytes   | 38 |
| 1730 | Szabo, B., Wallmichrath, I., and Engler, B.   | Cannabinoids Depress GABAergic Neurotransmission Between the Caudate-Putamen and Globus Pallidus   | 39 |
| 1745 | Tanganelli, S., Ferraro, L., Antonelli, T., Tomasini, M.C., Tattoli, M., and Cuomo, V.                    | Prenatal Exposure to the CB <sub>1</sub> Receptor Agonist WIN55212-2 Alters Hippocampal and Cortical Glutamatergic Transmission. in Vivo and in Vitro Studies  | 40 |


## Neuroprotection and Neurodegenerative Disorders



►Chairs: *D. Baker / M. Glass*

|      |  |  |   |
|------|--|--|---|
| 1800 | Pryce, G., and Baker, D.   | Inhibition of Experimental Spasticity by CB <sub>1</sub> and FAAH Inhibitors in Cannabinoid Gene Knockout Mice                                   | 41  |
| 1815 | Musty, R.E., Cline, H.M., and Deyo, R.A.   | THC Ameliorates Behavioral Deficits in the Spastic Mouse   | 42  |
| 1830 | Malfitano, A.M., Matarese, G., Lechler, R.I., Pisanti, S., Laezza, C., Di Marzo, V., and Bifulco, M.                             | Arvanil Inhibits T-Lymphocyte Activation and Ameliorates the Course and Progression of Experimental Autoimmune Encephalomyelitis                 | 43  |
| 1845 | Ortega-Gutiérrez, S., Molina-Holgado, E., Arévalo-Martín, A., Viso, A., López-Rodríguez, M.L., and Guaza, C.                     | Anandamide Uptake Inhibition as Therapeutic Approach in a Murine Model of Multiple Sclerosis   | 44  |
| 1900 | Cabranes, A., de Lago, E., Di Marzo, V., Minassi, A., Sánchez, A., García-Merino, A., Ramos, J.A., and Javier Fernández-Ruiz, J. | Beneficial Effects of Inhibitors of the Endocannabinoid Transport in a Rat Model of Multiple Sclerosis: Involvement of Vanilloid TRPV1 Receptors | 45  |
| 1915 | Esposito, G., Iuvone, T., Esposito, R., Santamaria, R., and Izzo, A.A.   | Neuroprotective Effect of Cannabidiol on $\beta$ -Amyloid-Induced Toxicity in PC12 Cells   | 46  |
| 1930 | <b>Break</b>   |  |   |
| 2030 | <b>Dinner</b>  |  |  |



## Friday June 25<sup>th</sup>


|      |                  |   |
|------|------------------|---|
| 0700 | <b>Breakfast</b> |  |
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| <b>Reproduction and Brain Development</b>   |  |  |    |
|---|--|--|----|
| ➤ <i>Chairs: M. Maccarrone / J.J. Fernandez-Ruiz</i>                              |  |  |    |
|   | Schuel, H., and Burkman, L.J.  | <b>not to be presented</b>   | 47 |
| 0815  | Gómez, M., Hernández, M., de Miguel, R., Ramos, J.A., and Fernández-Ruiz, J.   | Relationship of the Endocannabinoid System with Several Key Proteins for Brain Development in Rats   | 48 |
| 0830  | Aguado, T., Monory, K., Palazuelos, J., Stella, N., Cravatt, B., Lutz, B., Marsicano, G., Guzmán, M., and Galve-Roperh, I.   | Expression and Function of the Endocannabinoid System in Neural Progenitor Cells   | 49 |
| <b>Sensory Nervous System and Pain</b>  |  |  |    |
| ➤ <i>Chairs: S. Maione / M.J. Walker</i>  |  |  |    |
| 0845  | Lichtman, A.H., Shelton, C.C., Jackson, C., Saghatelian, A., and Cravatt, B.F.   | Inhibition of FAAH Leads to CB <sub>1</sub> -Mediated Analgesia Accompanied by Significant Increases in Endogenous Anandamide in Brain and Spinal Cord   | 50 |
| 0900  | Holt, S., Costa, B., and Fowler, C.  | FAAH Inhibitors and Indomethacin Reduce Carrageenan Induced Hind Paw Inflammation in the Mouse – Role of Cannabinoid Receptors   | 51 |
| 0915  | Malan, Jr., T.P., Ibrahim, M.M., Makriyannis, A., and Porreca, F.  | CB <sub>2</sub> Cannabinoid Receptors may Produce Peripheral Analgesia by Stimulating Local Release of Endogenous Opioids  | 52 |
| 0930  | Maione, S., de Novellis, V., Mariani, L., Vita, D., Scafuro, M., and Rossi, F.   | Interactive Role of Periaqueductal Gray CB <sub>1</sub> and MGlu5 Receptors in the Formalin-Induced Changes in RVM ON- and OFF-Cells   | 53 |
| 0945  | Castañé, A., Celerier, E., Martin, M., Murtra, P., Ledent, C., Parmentier, M., Maldonado, R., and Valverde, O.   | Study of CB <sub>1</sub> Cannabinoid Receptor Knockout Mice in a Model of Neuropathic Pain   | 54 |
| 1000  | Dogrul, A., Gül, H., Yıldız, O., Bilgin, F., and Güzeldemir, M.E.  | Cannabinoids Blocks Tactile Allodynia in Diabetic Mice without Attenuation of its Antinociceptive Effect   | 55 |
| 1015  | Duncan, M., Millns, P., Kendall, D., and Ralevic, V.   | The Actions of WIN55,212 and THC on the Capsaicin-Evoked Calcium Response in Cultured Rat Dorsal Root Ganglia  | 56 |
| 1030-1045   | <b>Round Table: CB<sub>1</sub> receptor antagonists as new therapeutic drugs</b><br><i>Coordinators: Murielle Rinaldi-Carmona, Francis Barth and Gerard Le Fur</i> |  |    |
| 1045-1115   | <b>Coffee</b>   |  |    |
| <b>Effects on Gastrointestinal, Cardiovascular and other Peripheral Functions</b> |  |  |    |
| ➤ <i>Chairs: A.A. Izzo / N. Darmani</i>   |  |  |    |
| 1115  | Darmani, N.A., McClanahan, B.A., Trinh, C., Petrosino, S., Valenti, M., and Di Marzo, V.   | The Chemotherapeutic Agent Cisplatin Increases Brain 2-Arachidonoyl-Glycerol (2-AG) Concentrations and Concomitantly Reduces Intestinal 2-AG and Anandamide Levels in a Vomiting Species (The Least Shrew) | 57 |
| 1130  | Izzo, A.A., Capasso, R., Borrelli, F., Mascolo, N., Urbani, P., Di Marzo, V., and Capasso, F.  | Inhibitory Effect of N-Arachidonoylserotonin, a FAAH Inhibitor, on Gastric and Intestinal Motility in Mice   | 58 |
| 1145  | Demuth, D., Parsons, M., and Molleman, A.  | Cannabinoid-Mediated Inhibition of Nicotinic ACH Currents in Myenteric Neurons   | 59 |

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| 1200  | Grenard, P., Julien, B., Van Nhieu, J.T., Li, L., Ledent, C., Mallat, A., and Lotersztajn, S.  | Reduced Liver Fibrosis in Mice Invalidated for CB <sub>1</sub> Receptor   | 60  |
| 1215  | Maor, Y., Horowitz, M., and Mechoulam, R.  | Atypical Cannabinoids and their Role as Blood Pressure Regulators   | 61  |
| 1230  | Rademacher, D.J., Savoie, A.M., Patel, S., Rusch, N.J., and Hillard, C.J.  | The Vasoconstrictor U-46619 but not Serotonin Increases Endocannabinoid Content in the Middle Cerebral Artery: Evidence for Functional Relevance                              | 62  |
| 1245-1445   | <b>Lunch - NIDA Lunch</b><br>"Research Funding Initiatives for Non-US Citizens/Perminant Residents" presented by Dr. Steven Gust, National Institute on Drug Abuse, Extramural Funding, International Funding Initiatives. |   |    |
| 1445-1715   | <b>Poster Session</b>  |   | 162-201   |
| <b>Stress, Anxiety, and Psychiatric Disorders SIF Session</b><br>➤Chairs: E. Fride / R. Musty |  |   |   |
| 1715  | Patel, S., Roelke, C., Cravatt, B.F., and Hillard, C.J.  | Cannabinoid Modulation of Stress-Induced Amygdala Activation and Neuroendocrine Responses   | 63  |
| 1730  | Frider, E., Surise, R. Weidenfeld, J., and Mechoulam, R.   | The Endocannabinoid System Lowers the Stress Response   | 64  |
| 1745  | Hill, M.N., Karacaeyli, E., and Gorzalka, B.B.   | Pharmacological Enhancement of CB <sub>1</sub> Receptor Signaling Elicits an Antidepressant Effect in the Rat Porsolt Forced Swim Test  | 65  |
| 1800  | Zavitsanou K., Huang X.-F., and Solowij N.   | Significant Correlations Between Cannabinoid and Serotonin/Glutamate Receptor Densities in the Anterior Cingulate Cortex in Schizophrenia: A Site of Functional Interactions? | 66  |
| <b>Food-Intake and Energy Control</b><br>➤Chairs: G. Le Fur / G. Kunos                        |  |   |   |
| 1815  | Le Fur, G.   | Clinical Results with Rimonabant in Obesity   | 67  |
| 1830  | McLaughlin, P.J., Swezey, L.A., Winston, K.M., Makriyannis, A., and Salamone, J.D.   | Investigation of the Possible Non-Motivational Factors that could Contribute to the Suppression of Feeding Produced by CB <sub>1</sub> Antagonists                            | 68  |
| 1845-1915   | <b>Business Meeting</b>  |   |   |
| 1915-2000   | <b>Break</b>   |   |   |
| 2000  | <b>Dinner</b>  |   |  |
| 2130  | <b>Concert</b>   |   |   |

**Saturday June 26<sup>th</sup>**

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| 0700  | <b>Breakfast</b>   |  |    |
| <b>Cannabinoids and Cancer</b> <i>1<sup>st</sup> Session of SIF Monothematic Meeting</i>                              |  |  |   |
| ➤Chairs: <i>M. Bifulco / M. Guzman</i>  |  |  |   |
| 0815  | McAllister, S.D., Abood, M.E., Chan, C.L., Luu, T., Taft, R.J., and Yount, G.L.  | Δ <sup>9</sup> -THC but not WIN55,212-2 Produces Biphasic Effects on the Growth of Multiple Human Glioma Cell Lines                                    | 69  |
| 0830  | Grimaldi, C., Laezza, C., Iacuzzo, I., Eletto, D., Tecce, M.F., Portella, G., Di Marzo, V., and Bifulco, M.                                  | Role of Endocannabinoids in Tumor Progression: Anandamide Inhibits Cell Migration in Human Breast Cancer Cells   | 70  |
| 0845  | Velasco, G., Herrera, B., Carracedo, A., Gómez del Pulgar, T., and Guzmán, M.  | Mechanism of Cannabinoid-Induced Apoptosis of Leukaemia Cell Lines   | 71  |
| 0900  | Ligresti, A., De Petrocellis, L., Moriello, A.S., Portella, G., Bifulco, M., and Di Marzo, V.  | Effect of Plant Cannabinoids on Cancer Cell Proliferation  | 72  |
| 0915  | Tashkin, D.P., Cao, W., Morgenstern, H., Greenland, S., Roth, M.D., Simmons, M., and Zhang, Z-F.   | Marijuana Smoking and Hypermethylation of the Promoter Region of the O6(6)-Methylguanine DNA Methyltransferase Gene (MGMT) DNA Repair Gene MGMT        | 73  |
| <b>Novel Roles for Cannabinoid CB<sub>2</sub> Receptors</b> <i>2<sup>nd</sup> Session of SIF Monothematic Meeting</i> |  |  |   |
| ➤Chairs: <i>R. Mechoulam / L. Steardo</i>   |  |  |   |
| 0930  | Bab, I., Ofek, O., Karsak, M., Fogel, M., Wright, K., Attar-Namdar, M., Shohami, E., Zimmer, A., and Raphael Mechoulam, R.                   | Cannabinoid CB <sub>2</sub> Receptor and Human Osteoporosis  | 74  |
| 0945  | Karsak, M., Cohen-Solal, M., Kornak, U., Kubisch, C., de Vernejoul, M-C., Bab, I., and Zimmer, A.  | Human CB <sub>2</sub> Receptor is Associated with Osteoporosis   | 75  |
| 1000  | Steardo, L., Cottone, P., Sabino, V., Monteleone, P., Arcidiacono, D., Valenti, M., Carbonare, M.D., Matias, I., Cuomo, V., and Di Marzo, V. | Evidence for a Regulatory Role of Endocannabinoid System in the Rat Pineal Gland   | 76  |
| <b>Cannabinoids in the Eye “In memory of Anna Porcella”</b> <i>3<sup>rd</sup> Session of SIF Monothematic Meeting</i> |  |  |   |
| ➤Chairs: <i>S. Yazulla / D. Woodward</i>  |  |  |   |
| 1015  | Yazulla, S., Struik, M.L., and Kamermans, M.   | Cannabinoids Modulate the Light Response in Goldfish Cones   | 77  |
| 1030  | Woodward, D.F., Chen, J., Lu, T., Dinh, T., Cravatt, B.F., Matias, I., and Di Marzo, V.  | Tissue Distribution of 2-AG, PEA, Anandamide and Prostaglandins E <sub>2</sub> and F <sub>2α</sub> in FAAH <sup>-/-</sup> and FAAH <sup>+/+</sup> Mice | 78  |
| 1045-1115   | <b>Coffee</b>  |  |  |
| <b>Immune-Modulatory Actions</b> <i>4<sup>th</sup> Session of SIF Monothematic Meeting</i>                            |  |  |   |
| ➤Chairs: <i>C.J. Hillard / E. Munoz</i>   |  |  |   |
| 1115  | McHugh, D., and Ross, R.A.   | Effects of Anandamide on Human Neutrophil Migration  | 79  |
| 1130  | Roth, M.D., Akande, O.I., Kiertscher, S.M., Mercier, R., Makriyannis, A., and Tashkin, D.P.  | Monocytes Express Functional CB <sub>2</sub> Receptors and their Differentiation into Dendritic Cells is Modulated by THC                              | 80  |

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| 1145   | Carrier, E.J., Kearn, C.S., and Hillard, C.J.  | Inhibition of Microglial Proliferation by the Plant-Derived Cannabinoids THC and CBD  | 81  |
| 1200   | Baldwin, G.C., Roth, M.D., Whittaker, K., and TASHkin, D.P.  | Delta-9-THC Enhances HIV Replication in a HUPBL-SCID Mouse Model  | 82  |
| <b>Reward and Interactions with other Drugs of Abuse</b>                         |  |   | <b>5<sup>th</sup> Session of SIF</b>  |
| <b><i>Monothematic Meeting</i></b>   |  |   |   |
| ➤ <i>Chairs: L. Fattore / S. Tanganelli</i>                                      |  |   |   |
| 1215   | Izenwasser, S., Wade, D., and Collins, S.L.  | Chronic Nicotine Alters Cannabinoid Receptor Density in Adolescent Male but not Female or Adult Rats  | 83  |
| 1230   | Hungund, B.L., Vinod, K.Y., and Nowak, K.L.  | Modulation of Alcohol-Withdrawal Symptoms by CB <sub>1</sub> Receptor Antagonist SR141716A  | 84  |
| 1245-1430  | <b>Lunch</b>   |   |  |
| 1430-1730  | <b>Poster Session</b>  |   | 202-249   |
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| 1730   | Gorelick, D.A., Copersino, M., Boyd, S.J., Tashkin, D.P., Huestis, M., Heishman, S.J., Derman, J.C., and Simmons, M.S. | Cannabis Withdrawal among Non-Treatment-Seeking Cannabis Smokers  | 85  |
| 1745   | Huestis, M.A., Preston, K.L., Heishman, S.J., Boyd, S.J., Mondick, J., Bonnet, D., and Gorelick, D.A.                  | Antagonism of Inhaled Cannabis by Single and Multiple Doses of SR141716 (Rimonabant) in Male Subjects with a History of Cannabis Use          | 86  |
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| 1830   | Solowij, N., Respondek, C., and Ward, P.   | Functional Magnetic Resonance Imaging Indices of Memory Function in Long-Term Cannabis Users  | 89  |
| <b>Beneficial Effects of Non-Psychotropic Cannabinoids and Cannabis Extracts</b> |  |   |   |
| ➤ <i>Chairs: D. Parolaro / R.G. Pertwee</i>                                      |  |   |   |
| 1845   | Russo, E.B., Guy, G.W., Robson, P.J., and Pertwee, R.G.  | Tolerance and THC: Cannabis Based Medicine Extracts Maintain Long-term Clinical Efficacy Without Dosage Increases                             | 90  |
| 1900   | Hergenrath, J., Mikuriya, T., and Lucido, F.   | Research Medical Group Develops Clinical Data Collection Methods for Medicinal Cannabis Patients  | 91  |
| 1915   | Järvinen, T., Juntunen, J., Mannila, J., Jarho, P., and Niemi, R.  | Use of Prodrug and Cyclodextrin Technologies for the Formulation and Delivery of Cannabinoids   | 92  |
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| 2030 | <b>Award Banquet</b>   |
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| <b>Chemical and Structure Activity Relationship Studies on Proteins of the Endocannabinoid System</b>  |  |   |
|  | Pério, A., Rinaldi-Carmona, M., Barth, F., Congy, C., Martinez, S., Oustric, D., Maruani, J., Barnouin, M-C., Poncelet, M., Arnone, M., Finance, O., Soubrié, P., and Le Fur, G. | Biochemical and Pharmacological Characterization of SR147778, a New Potent and Selective CB <sub>1</sub> Antagonist<br>93   |
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|  | Francisco, M.E., Seltzman, H.H., Gilliam, A.F., Thomas, B.F., and Howlett, A.C.  | ARYL Pyrazole Ligands as CB <sub>1</sub> Cannabinoid Antagonists<br>95  |
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|  | De Petrocellis, L., van der Stelt, M., Trevisani, M., Moriello, A.S., Campi, B., Geppetti, P., and Di Marzo, V.  | Release of Intracellular Calcium by Stimulation of PLC/IP3-Pathway Leads to Anandamide Formation in Sensory Neurons<br>106  |

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