Michele Di Mascio
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Bethesda, MD, 20817

Education

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
University of Ancona, Ancona, Italy	B.S. + M.S.	1994	Electronic Engineering + Bioengineering, *cum laude*
University of Ancona, Ancona, Italy	B.S. + M.S.	1999	Biology + Biotechnology, *cum laude*
Pharmacological Research Institute, Mario Negri Sud, Santa Maria Imbaro, Chieti, Italy	Ph.D.	1999	Pharmacology

Research Interests

Imaging HIV pathogenesis in vivo with Single Photon and Positron Emission Tomography. Mathematical modeling of viral and cell dynamics. Drug distribution in anatomic compartments. Viral reservoirs.

Positions

2003- present: Mathematical Statistician. Division of Clinical Research, National Institute of Allergy and Infectious Diseases, NIH, Bethesda, MD, USA.

1999-2003: Post Doctoral Research Associate. Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM, USA.

Awards

Imaging Probe for the *In Vivo* Assessment of HIV-1 Dynamics (NIH 2003-2004). Principal Investigator: Dr. Michele Di Mascio

Special Act Award: February 2008, from National Institute of Allergy and Infectious Diseases- for the establishment of an imaging laboratory.

Professional experience

2004-present Establishment and coordination of an Imaging laboratory at NIAID to study HIV pathogenesis in vivo. Authorized user of SPECT Imaging laboratory. Scientific supervision of a team of biologist, bioengineer and mathematician.

Co-chair for 2005 International Workshop on T cell turnover and homeostasis in HIV infection. The National Institutes of Health, Bethesda, MD. Chairs: Michele Di Mascio and Zvi Grossman.

Co-chair for 1999 International School of Biomathematics "Delay Differential Equations in Physiologic modeling". Mario Negri Sud Institute, Santa Maria Imbaro, Chieti, Italy

Panel discussant at the Workshop on HIV Persistence and Eradication, Treatment Action Group, amfAR, , FAIR, 2008, Washington, DC, USA.

Editorial services:
Referee for Journal of AIDS, Blood, Journal of Theoretical Biology, International AIDS Society

Recent talks: Noninvasive Imaging of AIDS in vivo. Second annual workshop on Experimental Imaging of Infectious Diseases. *Bethesda*, USA, September 2007. Noninvasive in vivo Imaging of CD4 cells. SAIC-Frederick, USA, February 2008.

Peer-reviewed publications.

Di Mascio, M. & Esposito, E. The degree of inhibition of dopaminergic neurons in the ventral tegmental area induced by selective serotonin reuptake inhibitors is a function of the density-power-spectrum of the interspike interval. *Neuroscience* **79**, 957-61. (1997).

Di Matteo, V., Di Giovanni, G., **Di Mascio, M.** & Esposito, E. Selective blockade of serotonin2C/2B receptors enhances dopamine release in the rat nucleus accumbens. *Neuropharmacology* **37**, 265-72 (1998).

Di Mascio, M., Di Giovanni, G., Di Matteo, V., Prisco, S. & Esposito, E. Selective serotonin reuptake inhibitors reduce the spontaneous activity of dopaminergic neurons in the ventral tegmental area. *Brain Res Bull* **46**, 547-54. (1998).

Di Giovanni, G., **Di Mascio, M.**, Di Matteo, V. & Esposito, E. Effects of acute and repeated administration of amisulpride, a dopamine D2/D3 receptor antagonist, on the electrical activity of midbrain dopaminergic neurons. *J Pharmacol Exp Ther* **287**, 51-7. (1998).

Di Matteo, V., Di Giovanni, G., **Di Mascio, M.** & Esposito, E. Role of the serotonergic system in the control of mesocorticolimbic dopaminergic function. *Current Topic in Pharmacology* **4**, 107-116 (1999).

Di Giovanni, G., De Deurwaerdere, P., **Di Mascio, M.**, Di Matteo, V., Esposito, E. & Spampinato, U. Se2lective blockade of serotonin-2C/2B receptors enhances mesolimbic and mesostriatal dopaminergic function: a combined in vivo electrophysiological and microdialysis study. *Neuroscience* **91**, 587-97 (1999).

Di Matteo, V., Di Giovanni, G., **Di Mascio, M.** & Esposito, E. SB 242084, a selective serotonin2C receptor antagonist, increases dopaminergic transmission in the mesolimbic system. *Neuropharmacology* **38**, 1195-205. (1999).

Di Mascio, M., Di Giovanni, G., Di Matteo, V. & Esposito, E. Decreased chaos of midbrain dopaminergic neurons after serotonin denervation. *Neuroscience* **92**, 237-43 (1999).

Di Mascio, M., Di Giovanni, G., Di Matteo, V. & Esposito, E. Reduced chaos of interspike interval of midbrain dopaminergic neurons in aged rats. *Neuroscience* **89**, 1003-8 (1999).

Di Giovanni, G., Di Matteo, V., **Di Mascio, M.** & Esposito, E. Preferential modulation of mesolimbic vs. nigrostriatal dopaminergic function by serotonin(2C/2B) receptor agonists: a combined in vivo electrophysiological and microdialysis study. *Synapse* **35**, 53-61. (2000).

Di Matteo, V., Di Giovanni, G., **Di Mascio, M.** & Esposito, E. Effect of acute administration of hypericum perforatum-CO2 extract on dopamine and serotonin release in the rat central nervous system. *Pharmacopsychiatry* **33**, 14-8. (2000).

Di Matteo, V., **Di Mascio, M.**, Di Giovanni, G. & Esposito, E. Acute administration of amitriptyline and mianserin increases dopamine release in the rat nucleus accumbens: possible involvement of serotonin2C receptors. *Psychopharmacology (Berl)* **150**, 45-51. (2000).

Di Matteo, V., Di Giovanni, G., **Di Mascio, M.** & Esposito, E. Biochemical and electrophysiological evidence that RO 60-0175 inhibits mesolimbic dopaminergic function through serotonin(2C) receptors. *Brain Res* **865**, 85-90. (2000).

Metzner, K.J., Jin, X., Lee, F.V., Gettie, A., Bauer, D.E., **Di Mascio, M.**, Perelson, A.S., Marx, P.A., Ho, D.D., Kostrikis, L.G. & Connor, R.I. Effects of in vivo CD8(+) T cell depletion on virus replication in rhesus macaques immunized with a live, attenuated simian immunodeficiency virus vaccine. *J Exp Med* **191**, 1921-31. (2000).

Percus, J.K., Percus, O.E., Markowitz, M., Ho, D.D., **Di Mascio, M.** & Perelson, A.S. The distribution of viral blips observed in HIV-1 infected patients treated with combination antiretroviral therapy. *Bull Math Biol* **65**, 263-77. (2003).

Louie, M., Hogan, C., **Di Mascio, M.**, Hurley, A., Simon, V., Rooney, J., Ruiz, N., Brun, S., Sun, E., Perelson, A.S., Ho, D.D. & Markowitz, M. Determining the relative efficacy of highly active antiretroviral therapy. *J Infect Dis* **187**, 896-900. (2003).

Di Mascio, M., Dornadula, G., Zhang, H., Sullivan, J., Xu, Y., Kulkosky, J., Pomerantz, R.J. & Perelson, A.S. In a subset of subjects on highly active antiretroviral therapy, human immunodeficiency virus type 1 RNA in plasma decays from 50 to <5 copies per milliliter, with a half-life of 6 months. *J Virol* **77**, 2271-5. (2003).

Markowitz, M., Louie, M., Hurley, A., Sun, E., **Di Mascio, M.**, Perelson, A.S. & Ho, D.D. A novel antiviral intervention results in more accurate assessment of human immunodeficiency virus type 1 replication dynamics and T-cell decay in vivo. *J Virol* **77**, 5037-8. (2003).

Louie, M., Hogan, C., Hurley, A., Simon, V., Chung, C., Padte, N., Lamy, P., Baglatas, A., Flaherty, J., Coakley, D., **Di Mascio, M.**, Perelson, A.S. & Markowitz, M. Determining the antiviral activity of tenofovir DF in treatment-na.ve chronically HIV-1-infected individuals. *AIDS* 17: 1151-6 (2003).

Simon, V., Padte, N., Murray, D., Vanderhoeven, J., Wrin, T., Parkin, N., **Di Mascio, M.** & Markowitz, M. Infectivity and replication capacity of drug resistant HIV-1 variants isolated during primary infection. *J Virol* **77:** 7736-45 (2003).

Di Mascio, M., Markowitz, M., Louie, M., Hurley, A., Ho, D.D. & Perelson, A.S. Viral Blip Dynamics during HAART. *J Virol* **77:** 12165-72 (2003).

Di Mascio, M., Ribeiro, R., Markowitz, M., Ho, D. & Perelson, A.S. Modeling the long-term control of viremia in HIV-1 infected patients treated with antiretroviral therapy. *Math. Biosci.* **188:**47-62 (2003).

Di Mascio, M., Markowitz, M., Louie, M., Hurley, A., Hogan, C., Simon, V., Follmann, D., Ho, D.D. & Perelson, A.S. Dynamics of Intermittent Viremia During HAART in Patients who Initiate Therapy During Chronic versus Acute and Early HIV-1 Infection. *J Virol* **78**:10566-73 (2004)

Di Mascio, M., Percus, J.K., Percus, O.E., Markowitz, M., Ho, D.D., & Perelson, A.S. The duration of an intermittent episode of viremia. *Bull. Math. Biol.* **67**:885-900 (2005).

Kovacs, J.A., Lempicki, R.A., Sidorov, I., Adelsberger J., Sereti, I., Sachau, W., Kelly, G., Metcalf, J., Davey, R., Falloon, J., Polis, M., Tavel, J., Stevens, R., Lambert, L., Hosack, D., Issaq, H., Fox, S., Leitman, S., Baseler, M., Masur, H., **Di Mascio, M.**, Dimitrov, D., & Lane, C.H. Induction of Prolonged Survival of CD4+ T Lymphocytes by Intermittent IL-2 Therapy in Patients with HIV Infection. *J. Clin. Invest.* **115**: 2139-2148 (2005)

Di Mascio M., Sereti I., Matthews L., Natarajan V., Yoder C., Jones E., Chow C., Sidorov I., Dimitrov D., Metcalf J.A., Polis M.A. & Kovacs J.A. Differential dynamics of TCR excision circles and naïve T cells during immune reconstitution suggest that HIV depletes naïve T cells by activation to memory cells. *J. Virol.* **80**: 2665-2674 (2006).

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Kaur, A., **Di Mascio, M.**, Ribeiro R.M., Perelson, A.S., McClure, H.M. & Johnson R.P. Dynamics of T- and B-lymphocyte turnover in a natural host of simian immunodeficiency virus. *J Virol.* **82**:1084-93. (2008)

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Kiesewetter, D., Srinivasula, S., Knudson, K., Lim, E. & **M. Di Mascio**. *R* and *S* [^{18}F]FPMPA: Nucleotide Reverse Transcriptase Inhibitor for Biodistribution Studies. *J Labelled Compounds* **51**: 207-212 (2008)

Percus J.K., Percus, O.E. & **M. Di Mascio, M**. The amplitudes of viral blips in HIV-1 infected patients treated with antiretroviral therapy are power-law distributed. *J Theor Biol.* **257**: 2009.

Di Mascio, M, Paik C., Carrasquillo J., Maeng J-S., Jang B-S Shin I. S., Srinivasula S., Byrum R., Neria A., Catalfamo M., Nishimura Y., Reimann K., Martin M. & H. Clifford Lane. Non-Invasive In Vivo Imaging of CD4 Cells in SHIV Infected Non-human Primates. *Blood* **In press** (2009)

Di Mascio, **M**., S. Srinivasula, M. Collins, E. Lim, L.I. Cheng & D. Kiesewetter. Positron Emission Tomography agent for Non-Invasive Imaging of Antiretroviral Drug Penetration and Kinetics In Vivo. *submitted*

CHAPTER OF BOOK

M. Di Mascio, G. Di Giovanni and E. Esposito. Fourier analysis applied to the study of the electrical activity of midbrain dopaminergic neurons. In: International School of Biopysics: Neural circuit and Network (Eds. Torre, V. and Nicholls, J.), serie F: Computer and Systems, Vol. 167, pp. 41-51.