KATIA AQUILANO, PhD

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EDUCATION AND TRAINING

1998-1999 Student in the Biochemistry Laboratory at University of Rome Tor Vergata;
1999 Biological Sciences graduated at University of Rome Tor Vergata (110/110 cum laude);
1999-2002 PhD student in Molecular and Cellular Biology at the Department of Biology-University of Rome Tor Vergata;
2001 Fellowship at the IABBAM Institute-CNR (Naples, Italy).
2003 PhD degree in Molecular and Cellular Biology;
2003-2006 Post-doc position in Biochemistry at the Department of Biology-University of Rome Tor Vergata.

PROFESSIONAL EXPERIENCES

2006-2007 Research contract at IRCCS San Raffaele "La Pisana", Rome, Italy.
2007-2008 Research contract at the Biochemistry Institute of the University of Urbino "Carlo Bò".
2009-2018 Researcher in Technical and Applied Dietetics Sciences at the Department of Biology-University of Rome Tor Vergata.
2014-2017 Group Leader of Biochemistry of Ageing Laboratory – IRCCS San Raffaele "La Pisana", Rome, Italy.
2018- Associate Professor in Biochemistry at the Department of Biology-University of Rome Tor Vergata.

SCIENTIFIC ACTIVITY

She performed research in the field of human nutrition and diseases associated with cellular dysmetabolism and oxidative stress. By using in vitro and in vivo models of neurodegeneration and metabolic diseases, she studied at molecular level the following issues:
- Glutathione and superoxide dismutase in the control of reactive oxygen and nitrogen species metabolism;
- Redox signal transduction pathways in cell death and differentiation (adipogenesis, myogenesis);
- Modulation of lipid (synthesis and degradation of triglycerides) and mitochondrial metabolism;
- Control of mitochondrial turnover (biogenesis/mitophagy);
- Transcriptional regulation of mitochondrial DNA, antioxidant (SODs) and metabolic genes (ATGL, PGC-1alfa);
- Impact of nutrients and phytochemicals (polyphenols and organosulfur compounds) on redox homeostasis and cellular oxidative metabolism.

CURRENT SCIENTIFIC ACTIVITIES

- *METABOLIC DISORDERS*

She studies the effects of dietary patterns (e.g. low protein-high carbohydrate diet, high fat diet, calorie restriction, fasting) on adipose tissue metabolic profile (mitochondrial activity, thermogenesis. In particular, she aims at finding novel nutritional approaches that are effective in improving body metabolism and increase energy expenditure to overcome neurodegenerative diseases (e.g. Parkinson's disease and Friedreich's ataxia) and age-related metabolic diseases such as obesity and type 2 diabetes.

- *NEURODEGENERATIVE DISORDERS*

She is interested in discovering new molecular determinants of neuronal and skeletal muscle dysfunction as well as metabolic dysfunction occurring in ageing and its related disorders (e.g. Parkinson's disease and Friedreich's ataxia). In particular, the main goal is to investigate whether alterations of mitochondrial and lipid oxidative metabolism are relevant pathogenic factors. Testing the efficacy of nutritional/drug treatments (i.e. intermittent fasting, fat signal modulators) in counteracting the molecular/phenotypical features of age-related disorders is part of her current research.

TEACHING ACTIVITY

2011-	Technical and Applied Dietetics Sciences/Faculty of Medicine and Surgery/University of Rome Tor Vergata, Rome, Italy.
2011-2012	Human Nutritional Sciences/Telematic University San Raffaele, Rome, Italy.
2011-2015	Nutraceuticals and Human Health//Dept. Biology/University of Rome Tor Vergata, Rome, Italy.
2014-2016	Hospital and Community Catering/Faculty of Medicine and Surgery/University of Rome Tor Vergata, Rome, Italy;
2015-	Nutraceuticals and Human Health/Faculty of Pharmacy/University of Rome Tor Vergata, Rome, Italy;
2015-	Biochemistry and Evolution of Human Nutrition/Dept. Biology/University of Rome Tor Vergata, Rome, Italy.
2015- 2018	Metabolic Targets of Cancer/first-level Professional Master's Programme in Management of clinical experimentation in haematology and oncology"/University of Rome Tor Vergata-GIMEMA.
2016-2018	Mass Catering/Faculty of Medicine and Surgery/University of Rome Tor Vergata, Rome, Italy;

OTHER ACTIVITIES

- Associate Editor for *Frontiers in Nutrition, Frontiers in Genetics*
- Academic Editor for *International Journal of Cell Biology*
- Section Editor for *Reviews in Gastroenterology, Hepatology and Nutrition.*
- Review Editor for *Frontiers in Physiology, Frontiers in Molecular Neuroscience*
- Reviewer for scientific international journals such as *Scientific Reports, Free Radical Research, Food Chemistry, Journal of Neuroinflammation, Neural Plasticity, Neurochemistry International, Oxidative Medicine and Longevity, Recent Advances in DNA and Gene Sequences, Frontiers in Cellular Neuroscience, BBA-General Subject, Biochemistry & Biophysics Reports, Cell Death & Disease, Neuroscience, American Journal of Physiology, Endocrinology and Metabolism*.
- Grant Reviewer for Italian Ministry of University and Research.
- Grant Reviewer for National Science Center, Poland
- Task Force Member (*Validation Team*) of the Halifax Project "*Getting to Know Cance*r".

SOCIETY MEMBERSHIPS

Italian Society of Biochemistry and Molecular Biology (SIBB)
Italian Society of Human Nutrition (SINU)
Italian Association of Cell Culture (AICC)

SCIENTIFIC PRODUCTIVITY AND IMPACT

She is author of 66 publications published in "peer-reviewed" international journals, 3 book chapters, 47 publications in international congress proceedings.
She has an h index of 31 (Scopus, ISI Web Science).

AWARDED GRANTS

1. PRIN 2012 (ID: 20125S38FA) – Role: Principal Investigator
   Funding Agency: Ministry of Instruction, University and Research – MIUR (Italy)
   Mar 2014/Mar 2017 (157.143 Euro).
   Title: ***Alteration of cell differentiation and mitochondrial biogenesis in age-related disease. Dysregulation of NOX-Nrf2-Sirt1/PGC-1alpha pathway***
2. Young Researcher Grant 2012 (ID: GR-2011-02348047) – Role: Principal Investigator
   Funding Agency: Italian Ministry of Health (Italy)
   Nov 2014/Nov 2017 (326.909 Euro).
   Title: ***Dissecting the role of peroxisome proliferator-activated receptor gamma coactivator-1alpha (PGC-1a) and adipose triglyceride lipase (ATGL) in Parkinson's disease***
3. Uncovering Excellence – (ID: E82I15000180005) – Role: Principal Investigator
   Funding Agency: University of Rome Tor Vergata (Italy)
   Jun 2015/Oct 2016 (24.500 Euro)
   Title: ***Low-protein, high-carbohydrate (LPHC) diet as strategy to prevent metabolic diseases***
4. Seed Money Grant (https://www.livingwithataxia.org/t/ataxia-research-studies-awarded-funding-for-fy-2016-national-ataxia-foundation/3025/1) (https://ataxia.org/research/aquilano-katie-ph-d/)
   Role: Principal Investigator
   Funding Agency: NATIONAL ATAXIA FUNDATION – NAF (U.S.A.)
   Jan 2016/Jan2017 (15.000 USD).
   Title: ***Study of the role of lipid dysmetabolism in the pathogenesis of Friedreich's ataxia***
5. General Research Grant 2016 (http://www.curefa.org/scientific-news/newly-funded-fara-grants) - Role: Principal Investigator
   Funding Agency: Friedreich's Ataxia Research Alliance – FARA (U.S.A.)
   Mar 2017/Mar 2019 (197.000 USD).
   Title: ***Studying the role of brown fat in Friedreich's ataxia***

PUBBLICATIONS (2001-2019)

[1] Ciriolo MR, **Aquilano K**, De Martino A, Carrì MT, Rotilio G. (2001) Differential role of superoxide and glutathione in GSNO-mediated apoptosis: a rationale for mild forms of familial amyotrophic lateral sclerosis associated with less active Cu,Zn superoxide dismutase mutants *J. Neurochem.* **77**: 1433-1443. doi: 10.1046/j.1471-4159.2001.00383.x; WOS: 000169392400002

[2] Nencioni L, Iuvara A, **Aquilano K**, Ciriolo MR, Cozzolino F, Rotilio G, Palamara AT, Garaci E. (2003) Influenza A virus replication is dependent on an antioxidant pathway that involves GSH and Bcl-2. *FASEB J.* **17**: 758-760. doi: 10.1096/fj.02-0508fje; WOS: 000181456900013

[3] **Aquilano K**, Rotilio G, Ciriolo MR (2003) Proteasome activation and nNOS down-regulation in neuroblastoma cells expressing the G93A Cu,Zn SOD mutant involved in familial ALS. *J. Neurochem.* **85**: 1324-1335. doi: 10.1046/j.1471-4159.2003.01783.x; WOS:000182855400023

[4] Filomeni G, **Aquilano K,** Rotilio G, Ciriolo MR. (2003). Reactive oxygen species-dependent c-Jun NH2-terminal kinase/c-Jun signaling cascade mediates neuroblastoma cell death induced by diallyl disulfide. *Cancer Res.* **63**: 5940-5949. WOS: 000185672600042

[5] Rotilio G**, Aquilano K,** Ciriolo MR. (2003) Interplay of Cu,Zn superoxide dismutase and nitric oxide synthase in neurodegenerative processes. *IUBMB Life* **55**: 629-634. doi: 10.1080/15216540310001628717; WOS: 000187526800013

[6] Filomeni G, **Aquilano K**, Rotilio G, Ciriolo MR. (2005) Anti-apoptotic response to induced GSH depletion: involvement of heat shock proteins and NF-kB activation. *Antioxid. Redox Signal.* **7**: 446-455. doi: 10.1089/ars.2005.7.446; WOS: 000227319200015

[7] Palamara AT, Nencioni L, **Aquilano K,** De Chiara G, Hernandez L, Cozzolino F, Ciriolo MR, Garaci E. (2005) Inhibition of influenza A virus replication by resveratrol. *J. Infect. Dis.* **191:** 1719-1729. doi: 10.1086/429694; WOS: 000228465000019

[8] Cerchiaro G, **Aquilano K,** Filomeni G, Rotilio G, Ciriolo MR, Ferreira AM. (2005) Isatin-Schiff base copper(II) complexes and their influence on cellular viability. *J. Inorg. Biochem.* **99**: 1433-1440. doi: 10.1016/j.jinorgbio.2005.03.013; WOS: 000230217300003

[9] Filomeni G, **Aquilano K,** Civitareale P, Rotilio G, Ciriolo MR. (2005) Activation of c-Jun-N-terminal kinase is required for apoptosis triggered by glutathione disulfide in neuroblastoma cells. *Free Radic. Biol. Med.* **39**: 345-354. doi: 10.1016/j.freeradbiomed.2005.03.022; WOS: 000230774400005

[10] Filomeni G, **Aquilano K,** Rotilio G, Ciriolo MR (2005) Glutathione-related systems and modulation of extracellular signal-regulated kinases are involved in the resistance of AGS adenocarcinoma gastric cells to diallyl disulfide-induced apoptosis. *Cancer Res.* **65**: 11735-11742. doi:10.1158/0008-5472.CAN-05-3067; WOS: 000234159100063

[11] De Martino A, Filomeni G, **Aquilano K**, Ciriolo MR, Rotilio G. (2006) Effects of water garlic extracts on cell cycle and viability of HepG2 hepatoma cells. *J. Nutr. Biochem.* **17**, 742-749. doi: 10.1016/j.jnutbio.2005.12.005; WOS: 000241644900004

[12] **Aquilano K**, Vigilanza P, Rotilio G, Ciriolo MR. (2006) Mitochondrial damage due to SOD1 deficiency in SH-SY5Y neuroblastoma cells: a rationale for the redundancy of SOD1. *FASEB J.* **20**: 1683-1685. doi: 10.1096/fj.05-5225fje; WOS: 000240266600014

[13] **Aquilano K,** Filomeni G, Di Renzo L, Di Vito M, Di Stefano C, Salimei PS, Ciriolo MR, Marfè, G. (2007) Reactive oxygen and nitrogen species are involved in sorbitol-induced apoptosis of human erithroleukaemia cells K562. *Free Radic. Res.* **41**: 452-460. doi:10.1080/10715760601134459; WOS: 000245588900008

[14] **Aquilano K,** Filomeni G, Baldelli S, Piccirillo S, Rotilio G, Ciriolo MR. (2007) Neuronal nitric oxide synthase protects neuroblastoma cells from oxidative stress mediated by garlic derivatives. *J. Neurochem.* **101**: 1327-1337. doi:10.1111/j.1471-4159.2006.04431.x; WOS: 000246365600017

[15] **Aquilano K,** Vigilanza P, Rotilio G, Ciriolo MR. (2008) Transient cytoskeletal alterations after SOD1 depletion in neuroblastoma cells. *Cell. Mol. Life Sci.* **65**: 991-1004. doi: 10.1007/s00018-008-7526-3; WOS: 000254248000012

[16] **Aquilano K,** Baldelli S, Rotilio G, Ciriolo MR. (2008) Glutathione and Copper,Zinc superoxide dismutase are modulated by over-expression of neuronal nitric oxide synthase. *Int. J. Biochem. Cell Biol.* **40**: 2660-2670. doi: 10.1016/j.biocel.2008.05.013; WOS: 000259134100035

[17] **Aquilano K,** Baldelli S, Rotilio G, Ciriolo MR. (2008) Role of nitric oxide synthases in Parkinson's disease: a review on the antioxidant and anti-inflammatory activity of polyphenols. *Neurochem. Res*. **33**: 2416-2426. doi: 10.1007/s11064-008-9697-6; WOS: 000260961400006

[18] **Aquilano K**, Baldelli S, Rotilio G, Ciriolo MR (2009) Trans-resveratrol inhibits H_2O_2-induced adenocarcinoma gastric cells proliferation via inactivation of MEK1/2-ERK1/2-c-Jun signalling axis. *Biochem. Pharmacol.* **77**: 337-347. doi: 10.1016/j.bcp.2008.10.034; WOS: 000262935900005

[19] Nencioni L, De Chiara G, Sgarbanti R, Amatore D, **Aquilano K,** Marcocci ME, Serafino A, Torcia M, Cozzolino F, Ciriolo MR, Garaci E, Palamara AT. (2009) Bcl-2 expression and p38MAPK activity in cells infected with influenza A virus: impact on virally induced apoptosis and viral replication. *J. Biol. Chem.* **284**: 16004-16015. doi: 10.1074/jbc.M900146200; WOS: 000266501000066

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[21] **Aquilano K**, Vigilanza P, Filomeni G, Rotilio G, Ciriolo MR (2010) Tau dephosphorylation and microfilaments disruption are upstream events of the anti-proliferative effects of DADS in SH-SY5Y cells. *J. Cell. Mol. Med.* **14**: 564-577. doi: 10.1111/j.1582-4934.2008.00588.x; WOS: 000276950100008

[22] **Aquilano K,** Vigilanza P, Baldelli S, Pagliei B, Rotilio G, Ciriolo MR (2010) Peroxisome proliferator-activated receptor gamma co-activator 1alpha (PGC-1alpha) and sirtuin 1 (SIRT1) reside in mitochondria: possible direct function in mitochondrial biogenesis. *J. Biol. Chem.* **285**: 21590-21599. doi: 10.1074/jbc.M109.070169; WOS: 000279516100045

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[26] **Aquilano K,** Baldelli S, Ciriolo MR. (2011) Glutathione is a crucial guardian of protein integrity in the brain upon nitric oxide imbalance. *Comm. Integr. Biol.* **4:** 477-479. doi: 10.4161/cib.4.4.15654;

[27] Lettieri Barbato D, Baldelli S, Pagliei B, **Aquilano K***, Ciriolo MR. (2012) Caloric restriction and nutrient-sensing PGC-1 in mitochondrial homeostasis: new perspective in neurodegeneration. *Int. J. Cell Biol.* **2012**:759583. doi: 10.1155/2012/759583; ***Corresponding author.**

[28] **Aquilano K**, Baldelli S, Pagliei B, Cannata SM, Rotilio G, Ciriolo MR. (2012) p53 Orchestrates the PGC-1α-Mediated Antioxidant Response Upon Mild Redox and Metabolic Imbalance. *Antioxid. Redox Signal.* **18**: 386-399. doi: 10.1089/ars.2012.4615; WOS: 000312560700003

[29] Pagliei B*, **Aquilano K***, Baldelli S, Rotilio G, Ciriolo MR. (2013) Garlic-derived diallyl disulfide modulates peroxisome proliferator activated receptor gamma co-activator 1 alpha in neuroblastoma cells. *Biochem. Pharmacol.* **85**: 335-344. doi: 10.1016/j.bcp.2012.11.007; WOS: 000314622700005 ***Equal contribution.**

[30] **Aquilano K,** Baldelli S, Pagliei B, Ciriolo MR (2013) Extranuclear localization of SIRT1 and PGC-1α: an insight into possible roles in diseases associated with mitochondrial dysfunction. *Curr. Mol. Med.* **13**:140-154. doi: 10.2174/1566524113804486241; WOS: 000311960100012

[31] Baldelli S, **Aquilano K***, Ciriolo MR. (2013) Punctum on two different transcription factors regulated by PGC-1α: Nuclear factor erythroid-derived 2-like 2 and nuclear respiratory factor 2. *Biochim. Biophys. Acta.* 1830: 4137-4146. doi: 10.1016/j.bbagen.2013.04.006; WOS:000320896100013 ***Corresponding author**.

[32] Lettieri Barbato D, Tatulli G, **Aquilano K***, Ciriolo MR (2013) FoxO1 controls lysosomal acid lipase in adipocytes: implication of lipophagy during nutrient restriction and metformin treatment. *Cell Death Dis.* **4**:e861. doi: 10.1038/cddis.2013.404; WOS: 000326967100047 ***Corresponding Author**

[33] **Aquilano K***, Baldelli S, Ciriolo MR (2014) Nuclear recruitment of neuronal nitric-oxide synthase by α-syntrophin is crucial for the induction of mitochondrial biogenesis. *J. Biol. Chem.* 289: 365-78. doi: 10.1074/jbc.M113.506733; WOS: 000329370900032 ***Corresponding Author**

[34] Lettieri Barbato D*, **Aquilano K***, Cannata SM, Bernardini S, Rotilio G, Ciriolo MR (2014) Proline oxidase-adipose triglyceride lipase pathway restrains adipose cell death and tissue inflammation. *Cell Death Diff.* **21**:113. doi: 10.1038/cdd.2013.137; WOS: 000328622100013 ***Equal Contribution**

[35] Lettieri Barbato D, Tatulli G, **Aquilano K***, Ciriolo MR. (2014) Inhibition of age-related cytokines production by ATGL: a mechanism linked to the anti-inflammatory effect of resveratrol. *Mediators Inflamm.* **2014**:917698. doi: 10.1155/2014/917698; WOS: 000334761700001 ***Corresponding Author**

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[37] Amatore D, Sgarbanti R, **Aquilano K**, Baldelli S, Limongi D, Civitelli L, Nencioni L, Garaci E, Ciriolo MR, Palamara AT. (2014) Influenza virus replication in lung epithelial cells depends on redox-sensitive pathways activated by NOX4-derived ROS. *Cell Microbiol.* **17**: 131-45. doi: 10.1111/cmi.12343; WOS: 000346704300012

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[39] Baldelli S, Lettieri Barbato D, Tatulli G, **Aquilano K*[§]**, Ciriolo MR[§]. (2014) The role of nNOS and PGC-1α in skeletal muscle cells. *J. Cell Sci.* **127**: 4813-20. doi: 10.1242/jcs.154229; WOS: 000345324500002 ***Corresponding Author; [§]Equal contribution**

[40] Baldelli S, **Aquilano K[§]**, Ciriolo MR[§]. (2014) PGC-1α buffers ROS-mediated mitochondrial removal during myogenesis. *Cell Death Dis.* e1515. doi: 10.1038/cddis.2014.458; WOS: 000345643900009 **[§]Equal contribution**

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