Rosalba Senese was born on May 24,1980. Dr. Senese is Associate Professor of Physiology at the University of Caserta “Luigi Vanvitelli” where she teaches “General Physiology” for the degree in Biotecnology and Endocrine Pathophysiology and Metabolism” for the degree in SANU. In October 2005 she got a degree “summa cum Laude” in Biology and in December 2008 she got a PhD in “Processi Biologici e Biomolecole. In 2010/2011 she taught “Bioclinical and Pharmacological Methods”. In 2011/2012, 2012/2013, 2013/2014 and 2014/2015 she taught “General Endocrinology” for the degree in Biology. In 2007 she did an internship at the “Clinique Romande de Readaptatione” SUVA Care (Sion, Svizzera).

Dr. Rosalba Senese has been working on cellular mechanisms involved in energy expenditure and specifically on the effects of thyroid hormones at the cellular level and their mechanism of action. She investigated on the mechanisms through which thyroid hormones are able to induce, at mitochondrial level, an uncoupling between the electron transport and ATP synthesis and, thus, regulate heat production at cell level. Her studies contributed to the demonstration that Uncoupling Protein 3 (UCP3) is a molecular determinant of the calorigenic effect of T3 and that the mechanism of regulation of UCP3 expression by T3 is species-specific, and in particular that fatty acids are crucial for T3 mediated regulation of UCP3 expression in the rat, but not in mice and human, due to differential organization of promoter structure. She further demonstrated that T3 stimulates changes in muscle metabolism through rapid cytosolic signaling, activating kinases involved in both lipid and carbohydrate metabolism, concomitant with changes in myofiber content. Later her attention is focalized on the study of biological activity of 3,5-diiodothyronine (T2), a derivative of the peripheral metabolism of T3, that similar to T3, stimulates the resting metabolism but the mechanism of action of T2 is different from that of T3. By using a particular approach, the “top-down elasticity”, that allows to discriminate between proton-leak and redox-slip processes, she contributed to the demonstration that increased mitochondrial proton conductance as the "pathway" underlying the effect of T2 on mitochondrial uncoupling. Furthermore, she demonstrated that the administration of T2 to rats receiving a hyperlipidic diet reduces adiposity, body weight gain and prevents the diet-induced insulin resistance without inducing thyreotoxicosis. Indeed, T2 strongly increases hepatic fatty acid oxidation by activating SIRT1 and, thus, triggers a cascade of events resulting in improvement of the serum lipid profile and prevention of fat accumulation; T2 increases the muscle contents of fast/glycolytic fibers and sarcolemmal glucose transporter 4, up-regulates glycolytic enzymes and associated components supporting the metabolic shift toward a more glycolytic phenotype. In recent years, her attention is focalized on the white adipose tissue (WAT) and brown adipose tissue (BAT) and on the browning process, following the identification, that metabolically active BAT is present in humans and that the amount of BAT detectable in adult humans positively correlates with resting metabolic rate and inversely with body mass index and fat mass. In fact, recently she demonstrated that T2 is a thyroid hormone derivative able to activate BAT thermogenesis. She published 26 papers (total citation 536, H index: 13) on international journals (among others Diabetes, Faseb J., FEBS Letters, Endocrinology, Journal of Proteomics, European Journal of Physiology, Frontiers in Physiology). She is referee for international journal and she is editor for a research topic in Frontiers in Physiology. She is member of Physiological Society of Italy and of European Thyroid Association. She has been awarded for

- best Oral Comunication at the “Annual Meeting of Young Researcher in Physiology 2010”;
- best Poster Award for Cell Physiology at the 62th SIF Nazional Congress

She has been part of a project of relevant National interest (PRIN 2008) and Region interest (L.R.N.5 2007).