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Candiani Simona graduated in Biological Sciences at the University of Genoa (110/110 summa cum laude), is a Full professor at the Faculty of Science, University of Genoa. For many years he has been interested in neurobiology of the development and evolution of the chordate nervous. At the present he studies also neurodegenerative diseases and cancer by using zebrafish as vertebrate model.

She is a member of the Coordination Council of the Doctorate in Experimental Medicine at the University of Genoa.

Scientific Activities

She has participated in several national and international research projects on neurogenesis and neural differentiation. She is the author or co-author of 81 full papers published in international journals cited in ISI Journal Citation Reports and she attended numerous national and international congress.

Editorial Activities

Reviewer Editor of the Frontier in Cellular Neurosciences and Frontier in Neuroscience.

Member of the Editorial Committee of Genoa University Press (GUP: <http://gup.unige.it/node/45>).

Topic editor of Cells Journal (MDPI): https://www.mdpi.com/journal/cells/topic_editors

Reviewer for the following journals: Journal of the Marine Biological Association of the United Kingdom; Acta Biochimica et Biophysica Sinica; Cell and Tissue Research, BMC Microbiology, BMC Evolutionary Biology, Gene, Evolution and Development, PlosOne, Molecular Neurobiology, BMC Developmental Biology, Cells.

Reviewer for the ANR (Agence Nationale de la Recherche, France) of scientific projects

Teaching experiences:

Cytology and Histology, Cell and Developmental Biology, Evolutionary Biology, Forensic Cytology and Histology, Comparative Genomics at the Faculty of Sciences, University of Genoa.

Current Scientific Interests

- 1) Comparative neurobiology of protochordates (amphioxus and tunicates), teleosts and mouse
- 6) Role of retinoic acid on the neuronal differentiation
- 7) miRNA evolution on chordates
- 8) zebrafish as in vivo model for embryotoxicity and neurotoxicity studies
- 9) Natural killer cells and Immune checkpoints

List of publications

1. **Candiani,S**, Pestarino,M (1998). Expression of the tissue specific transcription factor Pit-1 in the lancelet, *Branchiostoma lanceolatum*. J Comp Neurol 392, 343-351.
2. **Candiani,S**, Pestarino,M (1998). Evidence for the presence of the tissue-specific transcription factor Pit-1 in lancelet larvae. J Comp Neurol 400, 310-316.
3. Masini,MA, Sturla,M, Gallinelli,A, **Candiani,S**, Facchinetti,F, Pestarino, M (1998). Expression of pro-opiomelanocortin (POMC) in the cerebral ganglion and ovary of a protochordate. Peptides 19, 1177-1181.

4. Pestarino,M, Massari,M, Alberton,A, **Candiani,S**, Vallarino,M (1998). Distribution of immunoreactive multiple forms of gonadotropin-releasing hormone in the brain of the antarctic fish, *Notothenia coriiceps*. Polar Biol 20, 352-356.
5. Massari,M, **Candiani,S**, Pestarino,M (1999). Distribution and localization of immunoreactive FMRFamide-like peptides in the lancelet. Eur J Histochem 43, 63-69.
6. **Candiani,S**, Pestarino,M (1999). The tissue-specific transcription factor Pit-1 is expressed in the spinal cord of the lancelet, *Branchiostoma lanceolatum*. Neurosci Lett 260, 25-28.
7. **Candiani,S**, Augello,A, Oliveri,D, Pestarino,M (2000). Immunoreactive endozepine-like peptides in the brain and pituitary of the Atlantic hagfish, *Myxine glutinosa*. Histochem J 32, 415-421.
8. Pestarino,M, **Candiani,S**, Masini,MA, Sturla,M, Augello,A, Oliveri,D, Vallarino,M (2000). Immunoreactive atrial natriuretic peptide and autoradiographic distribution of atrial natriuretic peptide binding sites in the brain of the Antarctic fish, *Chionodraco hamatus*. Polar Biol 23, 691-698.
9. Uva,BM, Vallarino,M, Tagliaferro,G, Pestarino,M, Falugi,C, Mandich,A, Masini,MA, Sturla,M, Prato,P, **Candiani,S**, Filosa,S, Campanella,C, Motta,C, Fusco,S (2000). Regulatory peptides and physiological adaptations to the cold environment in Antarctic teleosts. It J Zool 67(Suppl 1): 57-65.
10. Mathieu,M; Testino,M; **Candiani,S**; Vallarino,M; Pestarino,M (2001). Organization of neuropeptide tyrosine-like immunoreactive system in the brain of the Antarctic fish, *Trematomus bernacchii*. Polar Biol 24, 818-827.
11. Pennati,R, Groppelli,S, Sotgia,C, **Candiani,S**, Pestarino,M, DeBernardi,F (2001). Serotonin localization in *Phallusia mammillata* larvae and effect of 5-HT antagonists during larval development. Dev Growth Differ 43(6),647-656.
12. **Candiani,S**, Augello,A, Oliveri,D, Passalacqua,M, Pennati,R, DeBernardi,F, Pestarino,M (2001). Immunocytochemical localization of serotonin in embryos, larvae and adults of the lancelet, *Branchiostoma floridae*. Histochem J 33, 413-420.
13. **Candiani,S**, Oliveri,D, Carbonetti,S, Augello,A, Pestarino,M (2002). The tissue specific transcription factor Pit-1 in the Antarctic notothenioid fish, *Trematomus bernacchii*. Polar Biol 25:506-511.
14. **Candiani,S**, Castagnola,P, Oliveri,D, Pestarino,M (2002). Cloning and developmental expression of *AmphiBrn1/2/4*, a POU III gene in amphioxus. Mech Dev 116, 231-234.
15. **Candiani,S**, Kreslova,J, Benes,V, Oliveri,D, Castagnola,P, Pestarino,M, Kozmik,Z (2003). Cloning and developmental expression of amphioxus Dachsund. Gene Expr Patterns 3, 65-69.
16. Cardinali,M, Gioacchini,G, **Candiani,S**, Pestarino,M, Yoshizaki,G, Carnevali,O (2004). Hormonal regulation of vasa-like messenger RNA expression in the ovary of the marine teleost *Sparus aurata*. Biol Reprod 70, 737-743.
17. Fuentes,M, Schubert,M, Dalfo,D, **Candiani,S**, Benito,E, Gardenyes,J, Godoy,L, Moret,F, Illas,M, Patten,I, Permanyer,J, Oliveri,D, Boeuf,G, Falcon,J, Pestarino,M, Fernandez,JG, Albalat,R, Laudet,V, Vernier,P, Escriva,H (2004). Preliminary observations on the spawning conditions of the European amphioxus (*Branchiostoma lanceolatum*) in captivity. J Exp Zool B Mol Dev Evol 302, 384-391.
18. Del Buono,F, **Candiani,S**, Pestarino,M, Focarelli,R (2004). Glycoconjugate profiles of the lancelet (*Branchiostoma lanceolatum*) ovary: a lectin histochemical study by laser confocal microscopy. Zygote 12, 251-255.
19. Oliveri,D, **Candiani,S**, Parodi,M, Bertini,E, Pestarino,M (2005). A serotonergic system in the brain of the Antarctic fish, *Trematomus bernacchii*. Polar Biol 28, 366-371.
20. **Candiani,S**, Pennati,R, Oliveri,D, Locascio,A, Branno,M, Castagnola,P, Pestarino,M, De Bernardi,F (2005). Ci-POU-IV expression identifies PNS neurons in embryos and larvae of the ascidian *Ciona intestinalis*. Dev Genes Evol 215, 41-45.
21. **Candiani,S**, Oliveri,D, Parodi,M, Castagnola,P, Pestarino,M (2005). *AmphiD1/β*, a dopamine D1/β -adrenergic receptor from the amphioxus *Branchiostoma floridae*: evolutionary aspects of the catecholaminergic system during development. Dev Genes Evol 215, 631-638.
22. **Candiani,S**, Oliveri,D, Parodi,M, Pestarino,M (2006). Expression of *AmphiNaC*, a new member of the amiloride-sensitive sodium channel related to degenerins and epithelial sodium channels in amphioxus. Int J Biol Sci 2, 79-86.

23. **Candiani,S**, Oliveri,D, Parodi,M, Bestini,E, Pestarino,M (2006). Expression of *AmphiPOU-IV* in the developing neural tube and epidermal sensory neural precursors in amphioxus supports a conserved role of class IV POU genes in the sensory cells development. *Dev Genes Evol* 216, 623-633.
24. Marcoli,M, Maura,G, Cervetto,C, Giacobini,C, Oliveri,D, **Candiani,S**, Pestarino,M (2006). Nitric oxide-evoked cGMP production in Purkinje cells in rat cerebellum: an immunocytochemical and pharmacological study. *Neurochem Int* 49, 683-690.
25. De Bernardi,F, Pennati,R, **Candiani,S**, Zega,G, GropPELLI,S, Pestarino, M (2006). Serotonin in the morphogenesis of ascidian nervous system. *Caryologia* 59 (4): 373-379.
26. Pennati,R, **Candiani,S**, Biggiogero,M, Zega,G, GropPELLI,S, Oliveri,D, Parodi,M, De Bernardi,F, Pestarino, M (2007). Developmental expression of tryptophan hydroxylase gene in *Ciona intestinalis*. *Dev Genes Evol* 217, 307-313.
27. Kozmik,Z, Holland,ND, Kreslova,J, Oliveri ,D, Schubert,M, Jonasova ,K, Holland,LZ, Pestarino,M, Benes,V, **Candiani,S** (2007). *Pax-Six-Eya-Dach* network during amphioxus development: conservation *in vitro* but context-specificity *in vivo*. *Dev Biol* 306, 143-159.
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33. Zega,G, Biggiogero,M, GropPELLI,S, **Candiani,S**, Oliveri,D, Parodi,M, Pestarino,M, De Bernardi,F, Pennati,R (2008). Developmental expression of glutamic acid decarboxylase and of gamma-aminobutyric acid type B receptors in the ascidian *Ciona intestinalis*. *J Comp Neurol* 506(3), 489-505.
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36. Holland,LZ, Albalat,R, Azumi,K, Benito-Gutiérrez,E, Blow,MJ, Bronner-Fraser,M, Brunet,F, Butts,T, **Candiani,S**, Dishaw,LJ, Ferrier,DE, Garcia-Fernández,J, Gibson-Brown,JJ, Gissi,C, Godzik,A, Hallböök,F, Hirose,D, Hosomichi,K, Ikuta,T, Inoko,H, Kasahara,M, Kasamatsu,J, Kawashima,T, Kimura,A, Kobayashi,M, Kozmik,Z, Kubokawa,K, Laudet,V, Litman,GW, McHardy,AC, Meulemans, D, Nonaka,M, Olinski,RP, Pancer,Z, Pennacchio,LA, Pestarino,M, Rast,JP, Rigoutsos,I, Robinson-Rechavi,M, Roch,G, Saiga,H, Sasakura,Y, Satake,M, Satou,Y, Schubert,M, Sherwood,N, Shiina,T, Takatori,N, Tello,J, Vopalensky,P, Wada,S, Xu,A, Ye,Y, Yoshida,K, Yoshizaki,F, Yu,JK, Zhang,Q, Zmasek,CM, Putnam,NH, Rokhsar,DS, Satoh,N, Holland,PWH (2008). The amphioxus genome illuminates vertebrate origins and cephalochordate biology. *Genome Res* 18:1100-1111.
37. Takatori,N, Butts,T, **Candiani,S**, Pestarino,M, Ferrier,DEK, Saiga,H, Holland,PWH (2008). Comprehensive survey and classification of homeobox genes in the genome of amphioxus, *Branchiostoma floridae*. *Dev Genes Evol* 218(11-12):579-90.

38. **Candiani,S**, Moronti,L, Pestarino,M (2009). Expression of the Orphan Nuclear Receptor NR4A in a Putative Adenohypophyseal Homologue of Amphioxus. *Ann NY Acad Sci* 1163:361-4.
39. Zega,G, Pennati,R, **Candiani,S**, Pestarino,M, De Bernardi,F (2009). Solitary ascidians embryos (Chordata, Tunicata) as model organisms for testing coastal pollutant toxicity. *ISJ (Invert. Surv. J.)* 6: S29-S34.
40. Zega,G, **Candiani,S**, GropPELLI,S, De Bernardi,F, Pennati,R (2010). Neurotoxic effect of the herbicide paraquat on ascidian larvae. *Environ Toxicol Phar* 29: 24-31.
41. **Candiani,S**, Moronti,L, Pennati,R, DeBernardi,F, Benfenati,F, Pestarino,M (2010). The synapsin gene family in basal chordates: evolutionary perspectives in metazoans. *BMC Evol Biol* 10:32.
42. Ramoino,P, Milanese,M, **Candiani,S**, Diaspro,A, Fato,M, Usai,C, Bonanno,G (2010). γ -amino butyric acid (GABA) release in the ciliated protozoon *Paramecium* occurs by neuronal-like exocytosis. *J Exp Biol* 213(Pt 8):1251-8.
43. Monticone,M, Panfoli,I, Ravera,S, Puglisi,R, Jiang,M, Morello,R, **Candiani,S**, Tonachini,L, Biticchi,R, Fabiano,A, Cancedda,R, Boitani,C, Castagnola,P (2010). The nuclear genes *Mtfr1* and *Dufd1* regulate mitochondrial dynamic and cellular respiration. *J Cell Physiol.* 225(3):767-76.
44. Panfoli,I, Calzia,D, Ravera,S, Bruschi,M, Tacchetti,C, **Candiani,S**, Morelli,A, Candiano,G (2011). Extramitochondrial tricarboxylic acid cycle in retinal rod outer segments. *Biochimie* 93(9):1565-75.
45. **Candiani,S**, Moronti,L, De Pietri Tonelli,D, Garbarino,G, Pestarino,M (2011). A study of neural-related microRNAs in the developing amphioxus. *Evodevo* 2(1):15.
46. Humeau,Y, **Candiani,S**, Ghirardi,M, Poulain,B, Montarolo,P (2011). Functional roles of synapsin: lessons from invertebrates. *Semin Cell Dev Biol* 22(4):425-33.
47. **Candiani,S**. Focus on miRNAs evolution: a perspective from amphioxus (2012). *Brief Funct Genomics* 11(2):107-17.
48. **Candiani,S**, Moronti,L, Ramoino,P, Schubert,M, Pestarino,M (2012). A neurochemical map of the developing amphioxus nervous system. *BMC Neuroscience* 13:59-94.
49. Monticone,M, Daga,A, **Candiani,S**, Romeo,F, Mirisola,V, Viaggi,S, Melloni,I, Pedemonte,S, Zona,G, Giaretti,W, Pfeffer,U, Castagnola,P (2012). Identification of a novel set of genes reflecting different in vivo invasive patterns of human GBM cells. *BMC Cancer* 12(1):358.
50. Calzia,D, **Candiani,S**, Garbarino,G, Caicci,F, Ravera,S, Bruschi,M, Manni,L, Morelli,A, Traverso,CE, Candiano,G, Tacchetti,C, Panfoli,I (2013). Are rod outer segment ATP-ase and ATP-synthase activity expression of the same protein? *Cell Mol Neurobiol* 33(5):637-649.
51. Calzia,D, Barabino,S, Bianchini,P, Garbarino,G, Oneto,M, Caicci,F, Diaspro,A, Tacchetti,C, Manni,L, **Candiani,S**, Ravera,S, Morelli,A, Traverso,EC, Panfoli,I (2013). New findings in ATP supply in rod outer segments: insights for retinopathies. *Biol Cell* 105(8):345-358.
52. Kozmikova,I[‡], **Candiani,S**[‡], Fabian,P, Gurska,D, Kozmik,Z (2013). Essential role of Bmp signaling and its positive feedback loop in the early cell fate evolution of chordates. *Dev Biol* 382(2):538-554. **‡Equal contribution.**
53. Ramoino,P, **Candiani,S**, Pittaluga,AM, Usai,C, Gallus,L, Ferrando,S, Milanese,M, Faimali,M, Bonanno,G (2014). Pharmacological characterization of NMDA-like receptors in the single-celled organism *Paramecium primaurelia*. *J Exp Biol* 217(Pt 3):463-471.
54. Calzia,D, Garbarino,G, Caicci,F, Manni,L, **Candiani,S**, Ravera,S, Morelli,A, Traverso,CE, Panfoli,I (2014). Functional expression of electron transport chain complexes in mouse rod outer segments. *Biochimie* 102:78-82.
55. Garbarino,G, Costa,S, Pestarino,M, **Candiani,S**. Differential expression of synapsin genes during early zebrafish development (2014). *Neuroscience* 280:351-367.
56. **Candiani,S**, Garbarino,G, Pestarino,M. Detection of mRNA and microRNA Expression in Basal Chordates, Amphioxus and Ascidians (2015). *Neuromethods* 99:279-291.
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63. Zieger,E, **Candiani,S**, Garbarino,G, Croce,JC, Schubert,M (2018). Roles of Retinoic Acid Signaling in Shaping the Neuronal Architecture of the Developing Amphioxus Nervous System. *Mol Neurobiol.* 55(6):5210-5229.
64. Zieger,E, Garbarino,G, Robert,NSM, Yu,Jk, Croce,JC, **Candiani,S**, Schubert,M (2018). Retinoic acid signaling and neurogenic niche regulation in the developing peripheral nervous system of the cephalochordate amphioxus. *Cell Mol Life Sci* 75(13):2407-2429.
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69. Pesce,S, Squillario,M, Greppi,M, Loiacono,F, Moretta,L, Moretta,A, Sivori,S, Castagnola,P, Barla,A ‡, **Candiani,S** ‡, Marcenaro,E ‡ (2018). New miRNA Signature Heralds Human NK Cell Subsets at Different Maturation Steps: Involvement of miR-146a-5p in the Regulation of KIR Expression. *Front Immunol.* 9:2360. ‡**These authors share senior authorship**
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75. Corallo,D, Donadon,M, Pantile,M, Sidarovich,V, Cocchi,S, Ori,M, De Sarlo,M, **Candiani,S**, Frasson,C, Distel,M, Quattrone,A, Zanon,C, Basso,G, Tonini,GP, Aveic,S (2020). LIN28B increases neural crest cell migration and leads to transformation of trunk sympathoadrenal precursors. *Cell Death Differ.* 27(4):1225-1242.
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77. Bozzo,M, Candiani,S†, Schubert,M† (2020). Whole mount in situ hybridization and immunohistochemistry for studying retinoic acid signaling in developing amphioxus. *Methods*

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