Giulio Cossu

Date & place of birth: 11.02.53, Rome, Italy
Nationality: Italian
Education:
Maturità Classica, Rome, 1972
MD Degree, with Honors 1977

Current Position:
2012- Professor of Human Stem Cell Biology, Department of Cell and Developmental Biology, University College London

Previous appointments:
2008-2011: Director, Division of Regenerative Medicine, San Raffaele Scientific Institute, Milan
2005-2011: Professor of Histology and Embryology, Department of Biology, University of Milan
2000- 2008: Director of the "Stem Cell Research Institute", San Raffaele, Milan.
2003- 2006: Scientific Director of the San Raffaele Biomedical Science Park of Rome.
1999-2005: Professor of Histology and Embryology, II° Medical School, University of Rome "La Sapienza"
1994-1999: Professor, Dept. of Histology and Medical Embryology, II° Medical School, University of Rome "La Sapienza"
1993-1994: Visiting Professor. Dept. of Molecular Biology, Istitut Pasteur, Paris
1986-1993: Associate Professor, Dept. of Histology and Medical Embryology, University of Rome "La Sapienza"
1983-1986: Researcher, Institute Histology, University of Rome "La Sapienza"

Post-doctoral training:

1980-1983: USPHS Fogarty Fellow Wistar Institute, University of Pennsylvania
1978-1980: CNR Fellow, Institute Histology, University of Rome "La Sapienza"

Areas of interest:
Myogenic cell lineages; Myogenic determination; Muscle gene and cell therapy, Pluripotent stem cells.

Scientific Societies and Committees:
2011-: Member of the Cell Advanced Therapy (CAT) committee of EMA
2011- 2014: Member, Panel LS7, European Research Council
2011-: Member of the European Academy of Sciences
2008-2011: Directory Board of the International Society of Differentiation.

2008- : Senior Editor, EMBO Molecular Medicine
2008-: ISSCR Task Force for "Clinical Translation of Stem Cell Research"
2007- 2010: Chair, Panel LS7, European Research Council
2006-: Associate Editor, International Journal of Developmental Biology
2004- : Editorial Board, Cell Death & Differentiation
2004- : Editorial Board, Journal of Cell Science
2005-2008: Directory Board of the International Society for Stem Cell Research.
2003- : Member of the TIGEM External Scientific Advisory Board.
2002- 2005: Directory Board of the International Society for Stem Cell Research.
2003- 2006: Chairperson, Stem Cell Committee, European Society of Gene Therapy
2003-2006: Member of the Advisory Committee of the Armenise-Harvard Foundation
1998-2001: President, ABCD (Italian Society for Cell Biology and Differentiation)
1998-2001: Secretary , FISV (Italian Federation of Life Sciences)
1997- : EMBO Member
1990-1993: Member, ABCD Directory Board

Teaching activities:

2009 - : Developmental Biology; Differentiation and Cell Therapy; Bioethics.
2005 – 2009: Cellular and Molecular Pathology; Stem Cells; Bioethics.
1995 - 2005: Histology and Embryology
1996- 2005 : Histology and Embryology, Post-graduate Medical Specialty Schools in Cardiology, Neurology, Obstetrics and Gynecology
1996 - :Seminars in Graduate Schools

Seminars and Meetings:

- EMBO Workshop on "Molecular Biology and Pathology of myogenesis", Baia di Conte, Sassari, September 1992, **Organizer.**
- Gordon Research Conference on "Myogenesis", Il Ciocco, Lucca, May 2001. **Vice-Chairperson.**
- Gordon Research Conference "Myogenesis", Il Ciocco, Lucca, May 2004. **Chairperson.**
- EMBO Workshop on "Advances in Stem Cell Research", Paris April 6-8, 2011, **Co-organizer.**
- Speaker and/or Chairperson in most major meetings in the field of Stem Cell and Myogenesis. Seminars held in many Italian, European and North American Institutions.

Prizes and Awards:

- Galileo Prize for excellence in scientific research, City of Padua 2003.
- Stella d'oro per la Medicina, Rome 2005.

- Prize for excellence in Research, Medical Academy of Turin, 2007.
- Jean Brachet Memorial Lecture (ISD) Keystone Symposium "Stem Cells Cancer and Ageing", Singapore 28.09-03.10, 2008.
- Feltrinelli prize (Accademia dei Lincei) for science, 2011

Funding:

Success in securing funds for research is demonstrated by more than 10 EC networks, three of which as Coordinator and many other competitive international grants such as for example the ERC Advanced Investigator Grant (2008). Overall, GC has secured more than 10 M€ for his research in the last decade. A partial list of grants is pasted below:

Medical Research Council 2012
European Research Council (Advanced Investigator Award) 2008
European Community: 1992, 1993, 1995 (coordinator) 1998, 1999 (coordinator), 2003, 2005, 2005, 2006, 2008 (coordinator), 2009, 2010, 2011, 2012.
Muscular Dystrophy Association (USA): 2004.
Association Francoise contra les myopathies: 2001, 2004, 2005, 2006, 2007, 2008, 2009.
CureDuchenne: 2007.
Duchenne Parent Project: 2003, 2005, 2007, 2010.
*Telethon (Italy):*1998, 2000, 2003, 2005, 2008, 2009, 2010, 2011.
Italian Ministry of Research:1997, 1999, 2001, 2003, 2005, 2007, 2009.
Italian Ministry of Health: 2000, 2002, 2004, 2006, 2008, 2009.

Patents:

1 - Cossu, G, Dejana, E "Method to induce the differentiation of endothelial cells to cardiomyocites" WO03023022 - Science Park RAF spa, Priority Date 11/09/2001.
2 - Cossu, G, Cusella-De Angelis, MG "Method for establishing and expanding multipotent stem cells" WO03095631 - Fondazione Centro San Raffaele del Monte Tabor, Priority Date 13/05/2002
3 - Clementi, E, Cossu, G, Brunelli, S, Ongini, E "Use of nitrooxyderivative of drug for the treatment of muscular dystrophies " WO2007088123- Nicox s.a. 2007.
4 - Clementi, E, Cossu, G, Brunelli, S "Method of treatment for muscular dystrophy WO2007088050 - Fondazione Centro San Raffaele del Monte Tabor. Priority Date 03/02/2006.
5 - Cossu, G, Gonzalez Galvez, B, Tonlorenzi, R "Skeletal muscle periangioblasts and cardiac mesangioblasts, method for isolation and uses thereof" WO2007093412 - Fondazione Centro San Raffaele del Monte Tabor. Priority Date 16/02/2006.

Training and Mentoring

More than 40 undergraduate, graduate students and post-doctoral fellows have been trained since 1982. Many of these are now Professors or Researchers in various European Universities (e.g. Catholic University of Leuven, Trinity College in Dublin, Pavia, Rome, Milan and Research centers, eg. Istitut Pasteur, Istitut Monod, Istituto Superiore di Sanità etc.)

Publications (selected out of 189):

- Tedesco FS, Gerli MF, Perani L, Benedetti S, Ungaro F, Cassano M, Antonini S, Tagliafico E, Artusi V, Longa E, Tonlorenzi R, Ragazzi M, Calderazzi G, Hoshiya H, Cappellari O, Mora M, Schoser B, Schneiderat P, Oshimura M, Bottinelli R, Sampaolesi M, Torrente Y, Broccoli V, Cossu G. 2012. Transplantation of Genetically Corrected Human iPSC-Derived Progenitors in Mice with Limb-Girdle Muscular Dystrophy. **Science Translational Medicine** 4(140):140ra89.
- Dellavalle A, Maroli G, Covarello D, Azzoni E, Innocenzi A, Perani L, Antonini S, Sambasivan R, Brunelli S, Tajbakhsh S and Cossu G. 2011. Pericytes resident in post-natal skeletal muscle differentiate into muscle fibers and generate satellite cells. **Nature Comm.** Oct 11;2:499. doi: 10.1038/ncomms1508.
- Tedesco FS, Hoshiya H, D'Antona G, Gerli MFM, Messina G, Antonini S, Tonlorenzi R, Benedetti S, Berghella L, Torrente Y, Kazuki Y, Bottinelli R, Oshimura M, Cossu G. 2011. Stem Cell-Mediated Transfer of a Human Artificial Chromosome Ameliorates Muscular Dystrophy. **Science Translational Medicine** 3(96):96ra78.
- Messina G, Biressi S, Monteverde S, Magli A, Cassano M, Perani L, Roncaglia E, Tagliafico E, Starnes L, Cambpell CE, Grossi M, Goldhamer DJ, Gronostajski RM, Cossu G. 2010. Nfix regulates fetal specific transcription in developing skeletal muscle. **Cell** 140, 554-566.
- Gargioli C, Coletta M, De Grandis F, Cannata SM and Cossu G. 2008. PlGF-MMP9 expressing cells restore microcirculation and efficacy of cell therapy in old dystrophic muscle. **Nature Med.** 14:973-8.
- Berghella L, De Angelis L, De Buysscher T, Mortazavi A, Biressi S, Forcales SV, Sirabella D, Cossu G and Wold B 2008. A highly conserved molecular switch binds MSY-3 to regulate myogenin repression in post-natal muscle **Genes & Dev**. 22:2125-38.
- Dellavalle A, Sampaolesi M, Tonlorenzi R, Tagliafico E, Sacchetti B, Perani L, Innocenzi B, Galvez BG, Messina G, Morosetti R, Li S, Belicchi M, Peretti G, Chamberlain JS, Wright WE, Torrente Y, Ferrari S, Bianco P and Cossu G 2007. Pericytes of human skeletal muscle are myogenic precursors distinct from satellite cells. **Nature Cell Biol.** 9:255-267.
- Sampaolesi, M., Blot, S., D'Antona, G., Granger, N., Tonlorenzi, R., Innocenzi, A., Mognol, P., Thibaud, J.L., Galvez, B.G., Barthélémy, I., Perani, L., Mantero, S., Guttinger, M., Pansarasa, O., Rinaldi, C., Cusella De Angelis, M.G., Torrente, Y., Bordignon, C., Bottinelli, R. and Cossu, G. 2006. Mesoangioblast stem cells ameliorate muscle function in dystrophic dogs. **Nature**, 444:574-9

- Borello, U., Berarducci, B., Murphy, P., Bajard L, Buffa, V. Piccolo, S., Buckingham, M. and Cossu, G. 2006. The Wnt/b-catenin pathway regulates the Shh-mediated *Myf5* activation during somitogenesis. **Development**, 133, 3723-3732.
- Sampaolesi M, Torrente Y, Innocenzi A, Tonlorenzi R, D'Antona G, Pellegrino MA, Barresi R, Bresolin N, Cusella De Angelis MG, Campbell KP, Bottinelli R, Cossu G 2003. Cell therapy of alpha sarcoglycan null dystrophic mice through intra-arterial delivery of mesoangioblasts. **Science** 301, 487-492.
- Minasi, M.G., Riminucci, M, De Angelis, L,. Borello, U., Berarducci, B., Innocenzi, A., Caprioli, A., Sirabella, D., Baiocchi, M. De Maria, R., Jaffredo, T., Broccoli. V., Bianco, P. and Cossu, G. 2002. The meso-angioblast: a multipotent, self-renewing cell that originates from the dorsal aorta and differentiates into most mesodermal tissues. **Development** 129, 2773-2783.
- Condorelli G, Borello U, De Angelis L, Latronico M, Sirabella D, Coletta M, Galli R, Balconi G, Follenzi A, Frati G, Cusella De Angelis MG, Gioglio L, Amuchastegui S, Adorini L, Naldini L, Vescovi A, Dejana E, Cossu G. 2001. Cardiomyocytes induce endothelial cells to trans-differentiate into cardiac muscle: implications for myocardium regeneration. **Proc Natl Acad Sci U S A** 98:10733-8.
- Galli R, Borello U, Gritti A, Minasi MG, Bjornson C, Coletta M, Mora M, De Angelis MG, Fiocco R, Cossu G, Vescovi AL. 2000. Skeletal myogenic potential of human and mouse neural stem cells. **Nature Neurosci.** 3:986-91.
- De Angelis L, Berghella L, Coletta M, Lattanzi L, Zanchi M, Cusella-De Angelis MG, Ponzetto C, Cossu G. 1999. Skeletal myogenic progenitors originating from embryonic dorsal aorta coexpress endothelial and myogenic markers and contribute to postnatal muscle growth and regeneration. **J Cell Biol.** 147:869-78.
- Ferrari G, Cusella-De Angelis G, Coletta M, Paolucci E, Stornaiuolo A, Cossu G, Mavilio F. 1998. Muscle regeneration by bone marrow-derived myogenic progenitors. **Science** 279:1528-30.
- Tajbakhsh S, Borello U, Vivarelli E, Kelly R, Papkoff J, Duprez D, Buckingham M, Cossu G. 1998. Differential activation of Myf5 and MyoD by different Wnts in explants of mouse paraxial mesoderm and the later activation of myogenesis in the absence of Myf5. **Development** 125:4155-62.
- Lattanzi L, Salvatori G, Coletta M, Sonnino C, Cusella De Angelis MG, Gioglio L, Murry CE, Kelly R, Ferrari G, Molinaro M, Crescenzi M, Mavilio F, Cossu G. 1998. High efficiency myogenic conversion of human fibroblasts by adenoviral vector-mediated MyoD gene transfer. An alternative strategy for ex vivo gene therapy of primary myopathies. **J Clin Invest.** 101:2119-28.
- Tajbakhsh S, Rocancourt D, Cossu G, Buckingham M. 1997. Redefining the genetic hierarchies controlling skeletal myogenesis: Pax-3 and Myf-5 act upstream of MyoD. **Cell** 89:127-38.
- Cossu G, Kelly R, Tajbakhsh S, Di Donna S, Vivarelli E, Buckingham M. 1996. Activation of different myogenic pathways: myf-5 is induced by the neural tube and MyoD by the dorsal ectoderm in mouse paraxial mesoderm. **Development** 122:429-37.
- Cossu G, Kelly R, Di Donna S, Vivarelli E, Buckingham M. 1995. Myoblast differentiation during mammalian somitogenesis is 1995. dependent upon a community effect. **Proc Natl Acad Sci U S A.** 92:2254-8.

- Tajbakhsh S, Vivarelli E, Cusella-De Angelis G, Rocancourt D, Buckingham M, Cossu G. 1994. A population of myogenic cells derived from the mouse neural tube. **Neuron** 13:813-21.