Curriculum Vitae

Personal information	
First name / Surname	**Marco Vincenzo Patruno**
Address	Padova
Telephone	+39 049 8272792
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Mobile phone	+39 333
E-mail	marco.pat@unipd.it
Nationality	Italian
Date of birth	12 / 11 / 1969
Gender	Male
Occupational field	**Associate Professor in Veterinary Anatomy, University of Padova**
Work experience and education	
Date	2001 - Present
Occupation or position held	Associate Professor, Dept. Comparative Biomedicine & Food Science (BCA)
Main activities and responsibilities	Teaching: Professor of Veterinary Anatomy, Histology and Embryology for the Veterinary and Biotechnology course; Professor of Comparative Anatomy for the Animal Care course. - Responsible for the Internationalization Strategy of BCA Department. - Teaching commission of BCA - EAEVE commission - International commission of Padua University (delegate of the BCA Director) - iMOVES coordinator (Summer School) Research topics: - Characterization of adult stem cells in veterinary medicine - Study the effects of cryopreservation on mesenchymal stem cells isolated from adipose tissue of dog and peripheral blood of horse. - In vivo study on sheep/horse tendon/skin regeneration - Development of a human biocompatible tendon scaffold re-cellularized with adipose derived stem cells. - Results obtained during these years allowed to widen, also in the veterinary field, knowledge and potential application of stem cells obtained from peripheral blood or adipose tissue. In particular we have investigated the potential application of stem cells in tendon and skin regeneration both in sheep and horses and in human for full thickness tendon lesions.

-National Coordinator of the PRIN 2017 (started in 2019): BRITEs project.
BRITEs: Byproduct Recycling: Innovative TEchnology from the Sea

Scientific publications and miscellaneous

-EMA (European Medicines Agency) expert
-ANVUR delegate

- Prof. Patruno has gained the national scientific "abilitation" (ASN) for the sector 07/H1 on the 3-12-2013 and subsequently on the 24-10-2018

- h-index: 26

- Author of more than 150 international publications of which 64 full papers, 9 chapters in books of international interest, 61 international congress (14 times speaker), 38 national congress (9 times speaker); in collaboration with other colleagues, a text book of Embryology.
- National winner as "young researcher" at the 4° National Congress of Veterinary Morphology (2004, University of Torino).
- Supervisor of fellowship projects of many Italian postdocs in foreign institutions;
- Reviewer of projects for national and international agencies (ISF, ALW, Italian MIUR, and The French National Research Agency);
- Reviewer for ARTI, Agenzia Regionale per la Tecnologia e l'Innovazione, Regione Puglia ("FutureInResearch").
- Reviewer of scientific papers for a number of peer reviewed international journals (Animal Genomics; Cell and Tissue research; The Anatomical Record; Journal of Histochemistry and Cytochemistry; European Journal of Histochemistry; Comparative Biochemistry and Physiology; Genes development and evolution; Histochemistry and Cell Biology; Stem Cells; Tissue Engineering; Equine Veterinary Journal)
- Member associate of the Society for Experimental Biology (UK), Italian Association Veterinary Morphology, Group ABCD-Regulation of Development and the International Veterinary Regenerative Medicine Society (IVRMS).
- The research group led by Prof. Patruno has characterized adult stem cells from blood of the horse and adipose tissue of the dog and showed that cryopreservation does not modify their "stemness" features; recent studies focus on evaluating the regenerative potential of stem cells for the regular dense connective tissue (tendons) and skin, in vitro and in vivo. The same research group furnishes a service for Veterinarians named "Stem Cell Services" dedicated to the analysis and cryopreservation of stem cells of several animals.
- Divulgative paper in the Vet. Journal. (2012): http://www.vetjournal.it/approfondimento.php?codnotizia=5259
- Ecm journal, Divulgative paper about the research of Prof Patruno. Successful Recellularization of Human Tendon Scaffolds Using Adipose-Derived Mesenchymal Stem Cells and Collagen Gel, by Martinello et al. http://connexoncreative.com/publications/archives/ECM324.aspx
- -JEB journal; Divulgative paper about the research of Prof. Patruno. Out of place isoform: http://jeb.biologists.org/content/207/11/ii
- - Coordinator of iMOVES, International Mobility Of VEterinary Students (2014-18): thanks to regular funding, each year, 10 Italian and 10 American students join the summer school program involving Food Safety & Veterinary Clinical Rotations.
- Participating in the organization of the European Journal of Translational Myology: Functional Rejuvenation in Aging and Neuromuscular Disorders. Villa Emy B&B, Stra, Venice & Padova (Italy), September 29&30, 2015
- Participating in the organization of the 2016 Spring Padua Muscle Days: Muscle Decline in Aging and Neuromuscular Disorders Mechanisms and Countermeasures. Terme Euganee, Padova (Italy), April 13 - 16, 2016

Date	2000 – 2001
Occupation or position held	Post-Doc position
Main activities and responsibilities	One year of laboratory research aimed to clone genes important during regenerative processes.
Institution	Neural Development Group, Kings College, University of London, UK. Supervisor: Prof. A. Graham
Date	1998 - 2000
Occupation or position held	PhD student (research on biology of regeneration/reparative processes)
Main activities and responsibilities	Molecular and cellular biology applied to the study of regeneration in different animal models. Ph.D. degree in Developmental Biology: Royal Holloway, University of London. During my PhD degree I worked in different Universities: September 1998, laboratory of Dr. G. Wray, Department of molecular evolution. Stonybrook University of New York NY; August 1999, host at the Kristineberg Marine research station, University of Goteborg, SW.
Institution	School of Biological Sciences, Royal Holloway, University of London Supervisor: Prof. M. Thorndyke
Date	1996 -1997
Occupation or position held	Post graduate researcher
Main activities and responsibilities	Research topic: study the satellite stem cells during the muscle growth of *S. aurata*. In 1996 I won a grant (named "perfezionamento all'estero") used to work at the laboratory of Prof. M. Thorndyke, University of London. In the latter University I obtained, in 1997, another grant as an "outstanding" student, which allowed the payment of fees for the three year PhD course.
Institution	University of Milan, Dept. of Biology. Supervisor: Prof. MD Candia Carnevali
Date	1995 - 1996
Qualification	Student work placement in the Physiology laboratory of Prof. A. Rowlerson.
Main activities and responsibilities	Immunohistochemistry on myogenic factors during the development of different animal species.
Institution	University of London, Division of Physiology, United Medical and Dental Schools (UMDS) of Guy's and St. Thomas's Hospital. Supervisor: Prof. A. Rowlerson
Date	1995
Qualification	Master degree in Animal Sciences (110/110 cum laude)
Institution	University of Veterinary Medicine, Milan
Grants	- 1997, winner of a grant, named "perfezionamento all'estero" from the University of Milan used to work at the laboratory of Prof. M. Thorndyke, University of London. - 1998 winner of a grant as an "outstanding" student, which allowed the payment of fees

for the three years doctoral course.

- Responsible of the European project which promoted exchange between European scientists (ARI Project, http://www.cordis.lu/improving/).
- MIUR national grant (2002) in collaboration with prof. Carlo Reggiani and Vincenzo Lombardi (University of Florence).
- MIUR national grant (2004) in collaboration with prof. Carlo Reggiani (University of Padova).
- MIUR national grant (2006) in collaboration with prof. Carlo Reggiani and Stefano Schiaffino (University of Padova).
- Responsible of a research national grant regarding the effects of electrostimulation on muscle biology (2007-2009).
- Participant of a national research grant named “Special muscles in dog and human: study of muscle differentiation and remodelling” (2011-2013)
- Responsible of a local research grant regarding the use of Stem Cells in the Veterinary Field, from the University of Padova (2010-2012).
- Responsible for the project: “Stem cell-based treatments and biomimetic approaches for improving tendon regeneration." Progetto di Ateneo 2013.
- ASA s.r.l. Company (Italy); 2014 Grant: use of Laser Technologies to treat tendon disorders.
- Participant of a national research grant named “Exploring extracellular vesicles in mammary cancer of dogs and cats: identification and preliminary investigation of their potential role as intercellular “shuttles” of signals with clinical relevance”. Progetto di Ateneo (2016).
- 2016, BIRD161823/16 "Assegno di Ricerca: Skin regeneration: a comparative study among conventional vs innovative therapies in Veterinary Medicine."
- 2016, BIRD161771 Participating to the project: “Exploring extracellular vesicles in mammary cancer of dogs and cats: identification and preliminary investigation of their potential role as intercellular “shuttles” of signals with clinical relevance”.
- 2016-2017, GST – ANACURA (BELGIUM): granted for the project: “Induction of mesenchymal stem cells towards the tenogenic fate.”
- 2017, BIRD179241/17, "Assegno di Ricerca: “Induction of mesenchymal stem cells towards the tenogenic fate: an in vitro study”
- 2017, BIRD179751, Participating to the project: L’applicazione del cross-linking per il trattamento di lesioni corneali collagenolitiche sperimentalmente indotte in un modello porcino ex-vivo: valutazioni istologiche ed immunoistochimiche del processo riparativo."
- 2017: winner of the basic research grant (MIUR)
- 2019: NATIONAL COORDINATOR of PRIN (BRITEs project)

TEACHING GRANTS

- **iMOVES**: International Mobility Of VEterinary Students (2014-19)

project:

in 2008, 15.000€ in 2012, 18.000€ in 2014, 16.000€ in 2016, 8.500€ in 2018, 5.000€ in 2019).

- 2013, grant from the Ateneo of Padova for the mobility of researchers, named Cooperazione Universitaria

Personal skills and competences

Mother tongue	Italian

Other languages

Self-assessment	Understanding		Speaking		Writing
European level (*)	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1

(*) Common European Framework of Reference for Languages

Technical skills and competences

Molecular biology	Blood sample processing, RNA and DNA extraction from various types of tissues, RNA quality control (Agilent Bioanalyzer 2100), PCR, qRT-PCR, Sanger sequencing,primer design, protein extraction,Western Blot 454 Sequencing,Sanger Sequencing, Gene expression Profiling, RNA DNA extraction. PCR and real time PCR.
Gene expression profiling	Sample processing Data analysis: Partek Genomic Suite Software, OneChannel GUI - R Bioconductor, Gene Ontology Analysis,GSEA.
Next Generation Sequencing	Library preparation Data analysis of 454 Amplicon Ultra deep sequencing and Linux software
Cellular biology	*In vitro* culture of suspension and adherent cells, differentiation and identification of mesenchymal stem cells. Stem cells isolation from adipose tissue and from peripheral blood of human, dog and horse. Cellular transfection. In vitro explants of skin-tendon-cartilage tissue. Isolation of adult stem cells by magnetic beads sorting (MACS).
Biochemical Analysis	Immunofluorescence and Immunohistochemical procedures. Western blotting.
Histological Analysis	Tissue processing and embedding, section of different tissue with microtome and cryostat, classical, immunochemical and enzymatic staining. Transmission Electron microscope (TEM)
Organisational skills and competences	Ability to teamwork and research initiative, attitude for organization, to learn new techniques and to acquire new competences.
Computer skills and competences	Suites Office, (Microsoft Word, Excel, Access and Powerpoint), Adobe Acrobat and Photoshop. General browsers.
Driving licence	Yes (B)

Recent Publications (from 2010)

-) CANCELLARA L, QUARTESAN S, TONIOLO L, REGGIANI C, MELOTTI L, FRANCOLINI M, MASCARELLO F, MACCATROZZO L, PATRUNO M. Age-dependent variations in the expression of myosin isoforms and myogenic factors during the involution of the proximal sesamoidean ligament of sheep. Res Vet Sci. 2019 (in PRESS)

-) MELOTTI L, VEZZOLI E, MASCARELLO F, MACCATROZZO L, PATRUNO M. The natural involution of the sheep proximal sesamoidean ligament is due to depletion of satellite cells and simultaneous proliferation of fibroblasts: Ultrastructural evidence. Res Vet Sci. 2019 Mar 8;124:106-111. doi: 10.1016/j.rvsc.2019.03.005

-) MARTINELLO T, GOMIERO C, PERAZZI A, IACOPETTI I, GEMIGNANI F,

DEBENEDICTIS GM, FERRO S, ZUIN M, MARTINES E, BRUN P, MACCATROZZO L, CHIERS K, SPAAS JH, PATRUNO M. Allogeneic mesenchymal stem cells improve the wound healing process of sheep skin. BMC Vet Res. 2018;14:202. doi: 10.1186/s12917-018-1527-8.

-) PATRUNO M, PERAZZI A, MARTINELLO T, GOMIERO C, MACCATROZZO L, IACOPETTI I. Investigations of the corneal epithelium in Veterinary Medicine: State of the art on corneal stem cells found in different mammalian species and their putative application. Res Vet Sci. 2018;118:502-507. doi: 10.1016/j.rvsc.2018.05.006.

-) RAVARA B, GOBBO V, INCENDI D, PORZIONATO A, MACCHI V, CARO R, COLETTI D, MARTINELLO T, PATRUNO M. Revisiting the peculiar regional distribution of muscle fiber types in rat Sternomastoid Muscle. Eur J Transl Myol. 2018 Mar 1;28(1):7302. doi: 10.4081/ejtm.2018.7302. PMID: 29686819

-) PATRUNO M, MELOTTI L, GOMIERO C, SACCHETTO R, TOPEL O, MARTINELLO T. A mini-review of TAT-MyoD fused proteins: state of the art and problems to solve (2017) Eur J Transl Myol 27: 234-238. doi: 10.4081/ejtm.2017.6039

-) PATRUNO M, GOMIERO C, SACCHETTO R, TOPEL O, NEGRO A, MARTINELLO T. Tat-MyoD fused proteins, together with C2c12 conditioned medium, are able to induce equine adult mesenchimal stem cells towards the myogenic fate. Vet Res Commun. 2017. Vol 41:211-217. doi: 10.1007/s11259-017-9692-y.

-) MAGRO M, MARTINELLO T, BONAIUTO E, GOMIERO C, BARATELLA D, ZOPPELLARO G, COZZA G, PATRUNO M, ZBORIL R, VIANELLO F. Covalently bound DNA on naked iron oxide nanoparticles: Intelligent colloidal nano-vector for cell transfection. 2017. 1861(11 PtA):2802-2810.

-) PERAZZI ANNA, BONSEMBIANTE FEDERICO, GELAIN MARIA ELENA, PATRUNO MARCO, ENZO DI IORIO, MIGLIORATI ANGELO, IACOPETTI ILARIA (2017). Cytology of the healthy canine and feline ocular surface: comparison between cytobrush and impression technique. VETERINARY CLINICAL PATHOLOGY, Vol. 46:164-171. ISSN: 0275-6382, doi: 10.1111/vcp.12450

-) PATRUNO M, PERAZZI A., MARTINELLO T., BLASEOTTO A., DI IORIO E., IACOPETTI I. (2017). Morphological description of limbal epithelium: searching for stem cells crypts in the dog, cat, pig, cow, sheep and horse. VETERINARY RESEARCH COMMUNICATIONS, Vol. 41: 1694-173, ISSN: 0165-7380, doi: 10.1007/s11259-017-9676-y

-) SPAAS JAN H., GOMIERO CHIARA, BROECKX SARAH Y., VAN HECKE LORE, MACCATROZZO LISA, MARTENS ANN, MARTINELLO TIZIANA, PATRUNO MARCO (2016). Wound-healing markers after autologous and allogeneic epithelial-like stem cell treatment. CYTOTHERAPY, vol. 18, ISSN: 1465-3249, doi: 10.1016/j.jcyt.2016.01.008

-) GOMIERO CHIARA, BERTOLUTTI GIULIA, MARTINELLO TIZIANA, VAN BRUAENE NATHALIE, BROECKX SARAH Y., PATRUNO MARCO, SPAAS JAN H. (2016). Tenogenic induction of equine mesenchymal stem cells by means of growth factors and low-level laser technology. VETERINARY RESEARCH COMMUNICATIONS, vol. 40, ISSN: 0165-7380, doi: 10.1007/s11259-016-9652-y

-) ILARIA IACOPETTI, ANNA PERAZZI, VALENTINA MANIERO, TIZIANA MARTINELLO, MARCO PATRUNO, MILJANA GLAZAR, ROBERTO BUSETTO (2015). Effect of MLS®Laser Therapy with Different Dose Regimes for the Treatment of Experimentally Induced Tendinopathy in Sheep: Pilot Study. PHOTOMEDICINE AND LASER SURGERY, vol. 33, p. 154-163, ISSN: 1549-5418, doi: 10.1089/pho.2014.3775

-) PERAZZI A., PATRUNO M., MARTINELLO T., GLAZAR M., IACOPETTI I (2015). Effect of MLS® laser therapy for the treatment of experimentally induced acute tendinopathy in sheep – a preliminary study. ENERGY FOR HEALTH, vol. 14, p. 4-7, ISSN: 2281-3268

-) MARTINELLO T, PASCOLI F, CAPORALE G, PERAZZI A, IACOPETTI I, PATRUNO M (2015). Might the masson trichrome stain considereda useful method for categorizing experimental tendon lesions? HISTOLOGY AND HISTOPATHOLOGY, ISSN: 0213-3911, doi: 10.16470/HH-11-601

-) PATRUNO M, MARTINELLO T (2014). Treatments of the injured tendon in Veterinary Medicine: from scaffolds to adult stem cells. HISTOLOGY AND HISTOPATHOLOGY, vol. 29, p. 417-422, ISSN: 0213-3911

-) BENEDETTO CD, BARBAGLIO A, MARTINELLO T, ALONGI V, FASSINI D, CULLORÀ E, PATRUNO M, BONASORO F, BARBOSA MA, CARNEVALI MD, SUGNI M (2014). Production,

characterization and biocompatibility of marine collagen matrices from an alternative and sustainable source: the sea urchin Paracentrotus lividus.. MARINE DRUGS, vol. 12, p. 4912-4933, ISSN: 1660-3397, doi: 10.3390/md12094912 -Impact Factor 2.853

-) GALGANO M, SPALLA I, CALLEGARI C, PATRUNO M, AURIEMMA E, ZANNA G, FERRO S, ZINI E. (2014). Primary Hypothyroidism and Thyroid Goiter in an Adult Cat.. JOURNAL OF VETERINARY INTERNAL MEDICINE, vol. 28, p. 682-686, ISSN: 0891-6640, doi: 10.1111/jvim.12283. -Impact Factor 1.879

-) BROECKX SY, MAES S, MARTINELLO T, AERTS D, CHIERS K, MARIËN T, PATRUNO M, FRANCO-OBREGON A, SPAAS JH. (2014). Equine epidermis: a source of epithelial-like stem/progenitor cells with in vitro and in vivo regenerative capacities. STEM CELLS AND DEVELOPMENT, vol. 23, p. 1134-1148, ISSN: 1547-3287, doi: 10.1089/scd.2013.0203.

15) MARTINELLO T, BRONZINI I, VOLPIN A, VINDIGNI V, MACCATROZZO L, CAPORALE G, BASSETTO F, PATRUNO M. (2014). Successful recellularization of human tendon scaffolds using adipose-derived mesenchymal stem cells and collagen gel.. JOURNAL OF TISSUE ENGINEERING AND REGENERATIVE MEDICINE, vol. 8, p. 612-619, ISSN: 1932-6254, doi: 10.1002/term.1557 -Impact Factor 5.199

-) PERAZZI A., BUSETTO R., MARTINELLO T., DRIGO M., PASOTTO D., CIAN F., PATRUNO M., IACOPETTI I. (2013). Description of a double centrifugation tube method for concentrating canine platelets BMC VETERINARY RESEARCH, 146, ISSN: 1746-6148, doi: 10.1186/1746-6148-9-146

-) RENZI S, RICCÒ S, DOTTI S, SESSO L, GROLLI S, CORNALI M, CARLIN S, PATRUNO M, CINOTTI S, FERRARI M. (2013). Autologous bone marrow mesenchymal stromal cells for regeneration of injured equine ligaments and tendons: A clinical report. RESEARCH IN VETERINARY SCIENCE. 95:272-7. (ISSN:0034-5288) doi: 10.1016/j.rvsc.2013.01.017

-) MARTINELLO T., BRONZINI I., PERAZZI A., TESTONI S., DE BENEDICTIS G.M, NEGRO A., CAPORALE G., MASCARELLO F., IACOPETTI I., PATRUNO M. (2013). Effects of in vivo applications of peripheral blood-derived mesenchymal stromal cells (PB-MSCs) and platlet-rich plasma (PRP) on experimentally injured deep digital flexor tendons of sheep. JOURNAL OF ORTHOPAEDIC RESEARCH (ISSN:0736-0266), 306- 314, 31;

-) V. CAPPELLO; E. VEZZOLI; MARCO RIGHI; M FOSSATI; R MARIOTTI; A. CRESPI; M. PATRUNO; M. BENTIVOGLIO; G. PIETRINI; M. FRANCOLINI (2012). Analysis of neuromuscular junctions and effects of anabolic steroid administration in the SOD1G93A mouse model of ALS MOLECULAR AND CELLULAR NEUROSCIENCES (ISSN:1044-7431);

-) BRONZINI I., PATRUNO M., IACOPETTI I., MARTINELLO T. (2012) Influence of temperature, time and different media on mesenchymal stromal cells shipped for clinical application. Vet J. 2012; 194:121-3

-) SACCHETTO R, SHAROVA E, PATRUNO M, MACCATROZZO L, DAMIANI E, MASCARELLO F. (2012) Overexpression of histidine-rich calcium binding protein in equine ventricular myocardium. Vet J. 2012;193:157-61.

-) CORNALI M, CARLIN S, FERRARI M, PERAZZI A, PATRUNO M, MARTINELLO T, IACOPETTI I. (2011). Application of autologous mesenchymal stem cells (MSCs) and platelet rich plasma (PRP) for the treatment of tendon-ligament injuries in thoroughbred racehorses IPPOLOGIA (ISSN:1120-5776), 35- 41, 4;

-) ALICE BARBAGLIO, CLAUDIA TURCHI, GIULIO MELONE, CRISTIANO DI BENEDETTO, TIZIANA MARTINELLO, MARCO PATRUNO, MAIRA BIGGIOGERO, IAIN C. WILKIE, M. DANIELA CANDIA CARNEVALI (2011). Larval development in the feather star Antedon mediterranea INVERTEBRATE REPRODUCTION & DEVELOPMENT (ISSN:0792-4259), 124-137, 56;

-) LUCINI C, D'ANGELO L, PATRUNO M, MASCARELLO F, DE GIROLAMO P, CASTALDO L. GDNF family ligand RET receptor in the brain of adult zebrafish. (2011) Neurosci Lett. 502:214-8. doi: 10.1016/j.neulet.2011.07.047.

-) MARTINELLO T, BRONZINI I, MACCATROZZO L, MOLLO A, SAMPAOLESI M, MASCARELLO F, DECAMINADA M, PATRUNO M Canine adipose-derived-mesenchymal stem cells do not lose stem features after a long-term cryopreservation. (2011) Res Vet Sci. 91:18-24.

-) MARTINELLO T, BRONZINI I, MACCATROZZO L, IACOPETTI I, SAMPAOLESI M, MASCARELLO F, PATRUNO M (2010). Cryopreservation does not affect the stem

characteristics of multipotent cells isolated from equine peripheral blood. TISSUE ENGINEERING, PART C: METHODS, vol. 16, p. 771-781, ISSN: 1937-3384, doi: 10.1089/ten.TEC.2009.0512

Padova, 08-11-2018

Signature