Chiara Bovolenta, PhD

PROFESSIONAL SKILLS

Long standing experience in gene therapy of HIV/AIDS, rare genetic diseases and onco-hematological diseases; viral vector manufacturing; consolidated experience as evaluator for international granting bodies; scientific grant and manuscript writing; innovation & IP; expert in regulatory issues related to Advanced Therapy Medicinal Products (ATMP); proficient in project-program management; long-term experience in teaching, student supervision and mentoring; excellent oral and written communication skills, teamworking and priority setting with attention to details to exceed stakeholders' expectations.

WORK EXPERIENCE

Jun 2020 to present

Senior Clinical and Research Project Manager

- Rete Italiana Screening Polmonare (RISP) program (www.programmarisp.it), Ministry of Health, MD RISP decree 8-11-21, Italy (NCT05766046)
- 4-IN-THE-LUNG-RUN (4-iTLR) project (https://4inthelungrun.com/en-gb/), Horizon2020, EC.

Fondazione IRCCS Istituto Nazionale dei Tumori (INT), Milano
www.istitutotumori.mi.it
Responsibilities:
-Managing scientific, regulatory, ethics and financial aspects for two national (RISP) and international (4-iTLR) lung cancer screening prevention programs.
-Reporting activities to Ministry of Health and European Commission.
-Coordinating 18 Italian medical centers within the RISP network and managing INT partner in the multi-national European consortium 4-iTLR.

2010 to present

Expert evaluator participating in FP7, H2020, Horizon Europe, and Eureka/Eurostars programs.

-Research Executive Agency (REA), (ERC, MSCA, WIDERA, HADEA-HE-HEALTH)
-European Innovation Council and SMEs Executive Agency (EISMEA-EIC), European Commission, Brussels - *https://ec.europa.eu*
-Research Foundation - Flanders (FWO), Brussels *https://www.fwo.be/en/*
-Fund for Scientific Research – FNRS (F.R.S.), Brussels *https://www.frs-fnrs.be/fr/*
-Eureka/Eurostars, Brussels,
https://www.eurekanetwork.org/countries/italy/eurostars/
-Innovation Fund Denmark (IFD) Grand Solutions, Copenhagen,
https://innovationsfonden.dk/en/programmes/grand-solutions.

Jan 2020 to May 2022

Consultant for Phase I/II trial therapeutic vaccination: HIV-CORE007 clinical trial (EudraCT Number: 2019-003102-26)

Viral Evolution and Transmission Unit, Immunology, Transplantation, and Infectious Disease Division– IRCCS San Raffaele Scientific Institute, Milano - *www.hsr.it*
Responsibilities:
Managing regulatory, QC, safety and ethics activities of the clinical trial

2003 to 2018 **Adjunct Professor of Molecular Medicine**
Molecular Medicine course at the Biomedical and Pharmaceutical Biotechnology Degree of the Vita-Salute San Raffaele University, Milano - *www.unisr.it*

2017 to 2020 **Internal Scientific Advisor**
MolMed SpA, Milano - *www.molmed.com*
Responsibilities:
Providing scientific and technological internal update of current trends on cell and gene therapy fields.
&
Health and Safety Manager
Responsibilities:
Design, develop, implement, and supervise Environmental Health & Safety (EHS) programs and SOPs in compliance to current legislation on biological agents and MOGM;

2000 to 2017 **Head, AIDS Therapy Unit** (2000-2009)
Head, New Technologies Unit (2009-2017)
GenEra, SpA, Milano (2000-2002)
MolMed SpA, Milano - *www.molmed.com*
Responsibilities:
-Developing innovative technologies for anti-HIV/AIDS gene therapy.
-Developing innovative technologies for the development of new packaging cell lines for stable production of lentiviral vectors.
-Managing a team of seven people composed of two PhDs, three graduates, and two technicians.
Main research achievements:
-5 patents (see Annex I)
-Several international scientific publications (see Annex I).

1996 to 2000 **Research Scientist, AIDS Immunopathogenesis Unit**
AIDS Immunopathogenesis Unit, San Raffaele Scientific Institute, Milano – *www.hsr.it*

EDUCATION & TRAINING

1994 to 1996 **Post-doctoral Fellow**
Institute of Biochemistry, Medical School, University of Verona - *www.univr.it*

1990 to 1994 **Guest Researcher**
-Molecular Genetics of Immunity, National Institute of Child Health and Human Development (NICHD) (1 year) and
-Receptor Cell Biology Section, Laboratory of Immunogenetics, National Institute of Allergy and Infectious Diseases (NIAID), National Institutes of Health (NIH), Bethesda, MD, USA - *www.nih.gov.*

17-06-1993 **PhD degree on Molecular and Cellular Biology and Pathology**
Medical School, University of Verona - *www.univr.it*

1988 II Sess. **Professional Qualification as Biologist**

11-03-1986 **Degree in Biological Sciences**
University of Florence, Italy - *www.unifi.it*

LANGUAGES

Italian	Mother tongue
English	Full professional knowledge
French	Beginner

Spanish Beginner

PUBLICATIONS

Author of 40 scientific manuscripts published in peer-reviewed international journals.

- Scopus *h*-index = 21
- Scopus Citations = 1,630

1. Schiroli G., Ferrari S., Conway A., Jacob A., Capo V., Albano L., Plati T., Castiello M.C., Sanvito F., Gennery A.R., **Bovolenta C**., Palchaudhuri, Scadden D.T., Holmes M.C., Villa A., Sitia G., Lombardo A., Genovese P., and Naldini L. (2017) Preclinical modeling highlights the therapeutic potential of hematopoietic stem cell gene editing for correction of SCID-X1 ***Sci Transl Med***. Oct 11;9(411). pii: eaan0820. doi: 10.1126/scitranslmed.aan0820.
2. Piovan C, Marin V., Scavullo C., Corna S., Giuliani E., Bossi, S., Galy, A., Fenard, D., Bordignon C., Rizzardi G.-P., and **Bovolenta, C**. (2017) Vectofusin-1 promotes RD114-TR-pseudotyped lentiviral vector transduction of human hematopoietic stem/progenitor cells and T lymphocytes ***Molecular Therapy - Methods and Clinical Development***, Mar 8;5:22-30. doi: 10.1016/j.omtm.2017.02.003. eCollection 2017 Jun 16.
3. Zucchelli E., Pema, M., Scavullo, C., Giuliani, E., Stornaiuolo, A., Bossi, S., Corna S., Asperti, C., Bordignon C., Rizzardi G.-P., and **Bovolenta, C**. (2017) Codon optimization leads to functional impairment of the RD114-TR envelope glycoprotein ***Molecular Therapy - Methods and Clinical Development***, Jan 11;4:102-114. doi: 10.1016/j.omtm.2017.01.002. eCollection 2017 Mar 17.
4. Farinelli, G. Hernandez. RJ, Rossi A., Ranucci, S., Sanvito, F., Migliavacca M., Brombin C., Pramov A., di Serio, C., **Bovolenta C**., Gentner, B., Bragonzi, A., and Aiuti, A. Lentiviral vector gene therapy protects XCGD mice from acute Staphylococcus aureus pneumonia and inflammatory response. ***Molecular Therapy*** Oct;24(10):1873-1880. doi: 10.1038/mt.2016.150. Epub 2016 Jul 26.
5. Marin, V., Stornaiuolo, A., Piovan, C., Corna S., Bossi, S., Pema, M., Giuliani, E., Scavullo, C., Zucchelli E., Bordignon C., Rizzardi G.-P., and **Bovolenta, C**. (2016) RD-MolPack technology for the constitutive production of self-inactivating lentiviral vectors pseudo-typed with the non-toxic RD114-TR envelope ***Molecular Therapy - Methods and Clinical Development*** May 11;3:16033. doi: 10.1038/mtm.2016.33. eCollection 2016
6. Merten, O.-W., Hebben, M., and **Bovolenta C**. (2016) Production of lentiviral vectors ***Molecular Therapy - Methods and Clinical Development*** Apr 13; 3:16017. doi: 10.1038/mtm.2016.17. eCollection 2016. Review
7. Stornaiuolo A., Piovani, B., Bossi, S., Zucchelli, E., Salvatori, F., Mavilio, F., Bordignon C., Rizzardi G.-P., and **Bovolenta, C**. (2013) RD2-MolPack-Chim3, a packaging cell line for stable production of lentiviral vectors for anti-HIV gene therapy. ***Human Gene Therapy Methods***, Aug;24(4):228-40. doi: 10.1089/hgtb.2012.190. Epub 2013 Aug 3.
8. **Bovolenta, C**., Porcellini, S., and Alberici, L. (2012) Therapeutic genes for anti-HIV/AIDS gene therapy. ***Curr. Pharm. Biotechnol*.** 2013; 14 (5):488-500. Review
9. Porcellini, S., Gubinelli, F., Alberici, L., Piovani, B., Rizzardi, G.-P., and **Bovolenta, C**. (2010) Chim3 confers survival advantage to CD4+ T-cells upon HIV-1 infection by preventing HIV-1 DNA integration and HIV-1 induced G2 cell cycle delay. ***Blood*,** May 20;115(20):4021-9. doi: 10.1182/blood-2009-09-243030. Epub 2010 Mar 10.
10. Porcellini, S., Alberici, L., Gubinelli, F., Lupo, R., Olgiati, C., Rizzardi, G.P. and **Bovolenta, C**. (2009) The F12-Vif derivative Chim3 inhibits HIV-1 replication in CD4+ T lymphocytes and CD34+-derived macrophages by blocking HIV-1 DNA integration. ***Blood***, Apr 9;113(15):3443-52. doi: 10.1182/blood-2008-06-158790. Epub 2009 Feb 11.
11. Maruggi, G., Porcellini, S., Facchini, G., Perna, S.K., Cattoglio, C., Sartori, D., Ambrosi, A., Schambach, A., Baum, C., Bonini, C., **Bovolenta, C**., Mavilio, F. and Recchia, A. (2009) Transcriptional Enhancers Induce Insertional Gene Deregulation Independently From the Vector Type and Design. ***Molecular Therapy***, May;17(5):851-6. doi: 10.1038/mt.2009.51. Epub 2009 Mar 17
12. Kataropoulou, A., **Bovolenta, C**., Belfiore, A., Trabatti, S., Garbelli, A., Porcellini, S., Lupo, R. and Maga, G. (2009) Mutational analysis of the HIV-1 auxiliary protein Vif identifies independent domains important for the physical and functional interaction with HIV-1 reverse transcriptase. ***Nucleic Acids Research***, Jun;37(11):3660-9. doi: 10.1093/nar/gkp226. Epub 2009 Apr 15
13. Crotti, A., Lusic, M., Lupo, R., Lievens, P.M., Liboi, E., Della Chiara, G., Tinelli, M., Lazzarin, A., Patterson, B.K., Giacca, M., **Bovolenta, C**. and Poli, G. (2007b) Naturally occurring C-terminally truncated STAT5 is a negative regulator of HIV-1 expression. ***Blood***, Jun 15;109(12):5380-9. Epub 2007 Mar 1.
14. Crotti, A., Chiara, G.D., Ghezzi, S., Lupo, R., Jeeninga, R.E., Liboi, E., Lievens, P.M., Vicenzi, E., **Bovolenta, C**.,

Berkhout, B. and Poli, G. (2007a) Heterogeneity of signal transducer and activator of transcription binding sites in the long-terminal repeats of distinct HIV-1 subtypes. ***Open Virol J,*** 1:26-32. doi: 10.2174/1874357900701010026. Epub 2007 Oct 20.

15. Vallanti, G., Lupo, R., Federico, M., Mavilio, F. and **Bovolenta, C**. (2005) T Lymphocytes Transduced with a Lentiviral Vector Expressing F12-vif Are Protected from HIV-1 Infection in an APOBEC3G-Independent Manner. ***Molecular Therapy***, 12, 697-706.
16. **Bovolenta, C**. (2004) Blocking HIV-1 Vif restores a natural mechanism of intracellular antiviral defense. ***Curr Drug Targets Immune Endocr Metabol Disord***, 4, 257-263.
17. Losana, G., **Bovolenta, C**., Rigamonti, L., Borghi, I., Altare, F., Jouanguy, E., Forni, G., Casanova, J.L., Sherry, B., Mengozzi, M., Trinchieri, G., Poli, G., Gerosa, F. and Novelli, F. (2002) IFN-gamma and IL-12 differentially regulate CC-chemokine secretion and CCR5 expression in human T lymphocytes. ***J Leukoc Biol***, 72, 735-742.
18. **Bovolenta, C**., Pilotti, E., Mauri, M., Turci, M., Ciancianaini, P., Fisicaro P., Bertazzoni U., Poli, G. and Casoli, C. (2002) Human T-cell leukemia virus type 2 induces survival and proliferation of CD34(+) TF-1 cells through activation of STAT1 and STAT5 by secretion of interferon-gamma and granulocyte macrophage-colony-stimulating factor. ***Blood***, 99, 224-31.
19. **Bovolenta, C**., Pilotti, E., Mauri, M., Panzeri, B., Sassi, M., Dall'Aglio, P., Bertazzoni, U., Poli, G. and Casoli, C. (2002) Retroviral interference on STAT activation in individuals coinfected with human T cell leukemia virus type 2 and HIV-1. ***J Immunol,*** 169, 4443-4449.
20. **Bovolenta, C**., Camorali, L., Mauri, M., Ghezzi, S., Nozza, S., Tambussi, G., Lazzarin, A. and Poli, G. (2001) Expression and activation of a C-terminal truncated isoform of STAT5 (STAT5 Delta) following interleukin 2 administration or AZT monotherapy in HIV-infected individuals. ***Clin Immunol***, 99, 75-81.
21. Alfano, M., Vallanti, G., Biswas, P., **Bovolenta, C**., Vicenzi, E., Mantelli, B., Pushkarsky, T., Rappuoli, R., Lazzarin, A., Bukrinsky, M. and Poli, G. (2001) The binding subunit of pertussis toxin inhibits HIV replication in human macrophages and virus expression in chronically infected promonocytic U1 cells. ***J Immunol***, 166, 1863-1870.
22. Vallanti, G., **Bovolenta, C**., Brambilla, A., Tambussi, G., Lazzarin, A., Vicenzi, E. and Poli, G. (2000) Immunologic reconstitution by interleukin-2: facts and open questions. ***J Biol Regul Homeost Agents,*** 14, 41-44.
23. Vicenzi, E., Bordignon, P.P., Biswas, P., Brambilla, A., **Bovolenta, C**., Cota, M., Sinigaglia, F. and Poli, G. (1999) Envelope-dependent restriction of human immunodeficiency virus type 1 spreading in CD4(+) T lymphocytes: R5 but not X4 viruses replicate in the absence of T-cell receptor restimulation. ***J Virol***, 73, 7515-7523.
24. Cassatella, M.A., Gasperini, S., **Bovolenta, C**., Calzetti, F., Vollebregt, M., Scapini, P., Marchi, M., Suzuki, R., Suzuki, A. and Yoshimura, A. (1999) Interleukin-10 (IL-10) selectively enhances CIS3/SOCS3 mRNA expression in human neutrophils: evidence for an IL-10-induced pathway that is independent of STAT protein activation. ***Blood***, 94, 2880-2889
25. **Bovolenta, C**., Lorini, A.L., Mantelli, B., Camorali, L., Novelli, F., Biswas, P. and Poli, G. (1999c) A selective defect of IFN-gamma- but not of IFN-alpha-induced JAK/STAT pathway in a subset of U937 clones prevents the antiretroviral effect of IFN-gamma against HIV-1. ***J Immunol***, 162, 323-330.
26. **Bovolenta, C**., Camorali, L., Lorini, A.L., Vallanti, G., Ghezzi, S., Tambussi, G., Lazzarin, A. and Poli, G. (1999b) In vivo administration of recombinant IL-2 to individuals infected by HIV down-modulates the binding and expression of the transcription factors ying-yang-1 and leader binding protein-1/late simian virus 40 factor. ***J Immunol***, 163, 6892-6897.
27. **Bovolenta, C**., Camorali, L., Lorini, A.L., Ghezzi, S., Vicenzi, E., Lazzarin, A. and Poli, G. (1999a) Constitutive activation of STATs upon in vivo human immunodeficiency virus infection. ***Blood***, 94, 4202-4209.
28. McDonald, P.P., **Bovolenta, C**. and Cassatella, M.A. (1998) Activation of distinct transcription factors in neutrophils by bacterial LPS, interferon-gamma, and GM-CSF and the necessity to overcome the action of endogenous proteases. ***Biochemistry***, 37, 13165-13173.
29. **Bovolenta, C**., Gasperini, S., McDonald, P.P. and Cassatella, M.A. (1998c) High affinity receptor for IgG (Fc gamma RI/CD64) gene and STAT protein binding to the IFN-gamma response region (GRR) are regulated differentially in human neutrophils and monocytes by IL-10. ***J Immunol***, 160, 911-919.
30. **Bovolenta, C**., Camorali, L., Lorini, A.L. and Poli, G. (1998b) HIV infection and signal transduction. ***J Biol Regul Homeost Agents***, 12, 63-66.
31. **Bovolenta, C**., Biswas, P., Vicenzi, E. and Poli, G. (1998a) Double doors and gatekeepers: HIV co-receptors and chemokines. ***Drug News Perspect***, 11, 620-624.
32. **Bovolenta, C**., Testolin, L., Benussi, L., Lievens, P.M. and Liboi, E. (1998d) Positive selection of apoptosis-resistant cells correlates with activation of dominant-negative STAT5. ***J Biol Chem***, 273, 20779-20784.

33. Carra, G., Giunta, M., Benati, C., **Bovolenta, C**., Tridente, G., Libonati, M. and Gerosa, F. (1996) Selective association of a 22-38 kDa glycoprotein with MHC class II DP antigen on activated human lymphocytes at the plasma membrane. ***Mol Immunol***, 33, 269-278.
34. **Bovolenta, C**., Gasperini, S. and Cassatella, M.A. (1996) Granulocyte colony-stimulating factor induces the binding of STAT1 and STAT3 to the IFNgamma response region within the promoter of the Fc(gamma)RI/CD64 gene in human neutrophils. ***FEBS Lett***, 386, 239-242.
35. **Bovolenta, C**., Lou, J., Kanno, Y., Park, B.K., Thornton, A.M., Coligan, J.E., Schubert, M. and Ozato, K. (1995) Vesicular stomatitis virus infection induces a nuclear DNA-binding factor specific for the interferon-stimulated response element. ***J Virol,*** 69, 4173-4181.
36. **Bovolenta, C**., Driggers, P.H., Marks, M.S., Medin, J.A., Politis, A.D., Vogel, S.N., Levy, D.E., Sakaguchi, K., Appella, E., Coligan, J.E. et al. (1994) Molecular interactions between interferon consensus sequence binding protein and members of the interferon regulatory factor family. ***Proc Natl Acad Sci U S A,*** 91, 5046-5050.
37. Tognon, M., Romanelli, M.G., Cattozzo, E.M., **Bovolenta, C**. and Liboi, E. (1993) c-fos proto-oncogene transient transcription is negatively affected in the ELa4-2 transformed rat cell line. ***Pathobiology***, 61, 288-292.
38. Punturieri, A., Shirakata, Y., **Bovolenta, C**., Kikuchi, G. and Coligan, J.E. (1993) Multiple cis-acting elements are required for proper transcription of the mouse V delta 1 T cell receptor promoter. ***J Immunol***, 150, 139-150.
39. **Bovolenta, C**., Tognon, M. and Liboi, E. (1991) Epidermal growth factor induces, in the EL alpha 4-2 cell line, herpes simplex virus-1 alpha 4 gene transcription in the absence of the viral trans-activator VP16. ***Virus Res***, 19, 199-208.
40. Scarpa, A., Bonetti, F., Menestrina, F., Menegazzi, M., Chilosi, M., Lestani, M., **Bovolenta, C**., Zamboni, G. and Fiore-Donati, L. (1987) Mediastinal large-cell lymphoma with sclerosis. Genotypic analysis establishes its B nature. ***Virchows Arch A Pathol Anat Histopathol***, 412, 17-21.

PATENTS

Inventor of 5 patents:

-**Bovolenta C**, HIV Vif mutants (WO2006/111866 A3).
-**Bovolenta C**., Stornaiuolo A., Mavilio F., Rizzardi P., Semi-stable production of lentiviral vectors (WO2012/028680 A1).
-**Bovolenta C**., Stornaiuolo A., Mavilio F., Rizzardi P., Stable production of lentiviral vectors (WO2012/028681 A1).
-**Bovolenta C**., Stornaiuolo A., Viral vectors purification system (PCT/EP2012/069713).
-Stornaiuolo A., **Bovolenta C**., Mavilio F., Rizzardi G-P. Stable integration of SIN Transfer Vectors (PCT/EP2016/081964).