

## 1. Biographical sketch

NAME <b>Silvia Boschi</b>	POSITION TITLE Postdoctoral Fellow Department of Neuroscience Via Cherasco 15 Turin 10026, ITALY
TITLE Neurobiologist, PhD	

### EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YYYY	FIELD OF STUDY
University of Torino, Italy	Biology	10/2008	Biology science
University of Torino, Italy	Neurobiology 110/110 cum laude	10/2010	Neurobiology
University of Torino, Italy	PhD	02/2015	Clinical Neuroscience
University of Rome "Niccolò Cusano", Italy.	Master	07/2016	Clinical Nutrition
Department of Neuroscience, Psychology, Drug Research and Child Health (NEUROFARBA), University of Florence	01/09/2016	1/09/2020	Postdoctoral fellow
Department of Neuroscience, Turin	1/9/2020	2023	Postdoctoral fellow

### Positions and Employment

1/2011-1/2015	PhD student at the Doctoral School in Life and Health Sciences – PhD Program in Neuroscience. Project name: ‘ INVOLVEMENT OF SQSTM1/P62 IN NEURODEGENERATIVE AND IN MUSCLE DISORDERS’.
03/2015-08/2015	Scholarship, title project “Creation of a database of patients affected by muscular dystrophy, not defined by histological, immunohistochemical and biochemical analyzes to be sequenced by Next Generation Sequencing”. Center for Neuromuscular Diseases "Paolo Peirolo", Department of Neuroscience "Rita Levi Montalcini", University of Turin, Italy.
09/2015-02/2016	Scholarship for management, tutoring and organization of Higher Education and Master's programs. Master activity in Diagnosis and therapy of Alzheimer's disease and dementias”. Department of Neuroscience, A.O.U Città della Salute e della Scienza di Torino/University of Torino, Italy.
3/2016-8/2016	Scholarship, title project “Sequence of the DISC-1 gene in patients with frontotemporal dementia.” Department of Neuroscience, A.O.U Città della Salute e della Scienza di Torino/ University of Torino, Italy.
09/2016-10/2016	Scholarship TELETHON, title project “ Clinical and molecular characterization of families with FSHD as a prerequisite for evaluating the efficacy of therapies”. Center for Neuromuscular Diseases "Paolo Peirolo", Department of Neuroscience "Rita Levi Montalcini", University of Turin, Italy.

- 2016- 10/2021 Postdoctoral Fellow, title project: “ Investigating new cerebrospinal fluid biomarkers in Alzheimer's disease”. Department of Neuroscience, Psychology, Drug Research and Child Health (NEUROFARBA), University of Florence. Supervisor: Prof. Sandro Sorbi.
- 2021- 3/2023 Postdoctoral Fellow. Title of the project: “Interessamento multisistemico delle miopatie metaboliche e in particolare delle malattie da accumulo lisosomiale muscolare: ottimizzazione del percorso diagnostico”. Supervisor: Prof.ssa Tiziana Mongini. Department of Neuroscience “Rita Levi Montalcini”, University of Torino, Italy.
- 04/2022-03/2023 Postdoctoral Fellow. Title of the project: “Studio dei biomarcatori autofagici nella malattia di Alzheimer e nelle miopatie con interessamento del sistema nervoso centrale”. Supervisor: Prof. Innocenzo Rainero. Department of Neuroscience “Rita Levi Montalcini”, University of Torino, Italy.

### **Experience in Pharmaceutical Clinical Trials:**

- 2013- 2015 Laboratory Technician in Clinical Trial IgPro20-3003. CSL Behring GmbH for the treatment of chronic inflammatory demyelinating polyneuropathy (CIDP). Principal Investigator: Dott. D. Cocito.
- 2014- 2016 Laboratory Technician in Clinical Trial Grunenthal Protocol KF6005/08. Clinical Study on DNP. Principal Investigator: Dott. D. Cocito.
- 2014-2017 Laboratory Technician in Clinical Study Protocol n°110E-0901 LIME Study. “A European, randomised, double-blind, active comparator- controlled, cross-over, efficacy and safety study of a new 10% ready-to-use liquid human intravenous immunoglobulin (110E) versus Kiovig in patients with Multifocal Motor Neuropathy”. Principal Investigator: Dott. D. Cocito.
- 2017-2018 Laboratory Technician in Clinical Study “A Phase III Study to Evaluate the Efficacy, Safety, and Tolerability of Immune Globulin Infusion 10% (Human) with Recombinant Human Hyaluronidase (HYQVIA/HyQvia) and Immune Globulin Infusion (Human) 10% (GAMMAGARD LIQUID/ KIOVIG) for the Treatment of Chronic Inflammatory Demyelinating Polyradiculoneuropathy (CIDP). Principal Investigator: Dott. D. Cocito.
- 2019- today Study coordinator “A phase 3 randomized, multi center, multinational, double-blinded study comparing the efficacy and safety of repeated biweekly infusions of neoGAA (GZ4026666) and alglucosidase alfa in treatment-naive patients with late onset Pompe disease. Principal Investigator: Prof.ssa T. Mongini.
- 2020- today Data manager “Comprehensive Assessment of Erenumab Efficacy in Subjects With High Frequency Episodic Migraine With at Least 1 Previously Failed Preventive Treatment: a Global, Double-blind, Placebo-controlled Phase 4 Study”. Principal Investigator: Prof. I.Rainero.
- 2019- today Study coordinator “INTERCEPTOR PROJECT ON early diagnosis of prodromal stage of Alzheimer disease. The progression from Mild cognitive impairment (MCI) to dementia: the role of biomarkers in early interception of patients candidate for prescription of future disease- modifying drugs. Strategic project promoted by the Italian Medicines Agency (AIFA). Principal Investigator: Prof. I.Rainero.
- 2021- today Data manager “Interventional, open- label, fixed dose multiple administration study to evaluate long-term treatment with eptinezumab in patients with chronicle cluster headache.” Principal Investigator: Prof. I.Rainero.

2022- today     Data manager “Studio clinico randomizzato, in doppio cieco, controllato con placebo, per valutare l’effetto e la sicurezza di semaglutide orale in soggetti affetti da morbo di Alzheimer in fase iniziale (EVOKE)”  
Principal Investigator: Prof. I.Rainero

**Certificates:**

- Shipping Infectious Substances by Air (IATA)
- Good Clinical Practice (GCP)

**Computer skills and competences**

- MICROSOFT OFFICE with ECDL Certificate;
- NEUROLUCIDA;
- ADOBE PHOTOSHOP;
- SIGMASTAT;
- SPSS;
- IMAGEJ;
- GIMP;
- NCBI database

**Professional skills and Technical skills**

- HISTOLOGY: CRYOSTAT, MICROTOME SECTIONING; IMMUNOHISTOCHEMICAL AND IMMUNOCITOchemistry REACTIONS ON TISSUE SLICES.
- CELLULAR/MOLECULAR TECHNIQUES: CELL CULTURES, PCR, ENZIMATIC DIGESTION, SEQUENCING, DNA EXTRACTION; WESTERN BLOT; NGS.
- CPT DOSAGE ON MUSCLE TISSUE; ACID MALTASE DOSAGE ON FROZEN MUSCLE TISSUE AND ON LYMPHOCYTES; CARNITINE DOSAGE ON SERUM OR IN FROZEN MUSCLE TISSUE.
- MICROSCOPY: OPTIC AND FLUORESCENT MICROSCOPY; NEUROLUCIDA, ImageJ.
- SURGERY: INTRACARDIAC PERFUSION.

## PUBLISHED PAPERS:

Scopus h index: 11

1. New insights into the genetic etiology of Alzheimer's disease and related dementias.  
Bellenguez C, Küçükali F, ... S, Pastor AA, Arosio B, Athanasiu L, Bailly H, Banaj N, Baquero M, Barral S, Beiser A, Pastor AB, Below JE, Benček P, Benussi L, Berr C, Besse C, Bessi V, Binetti G, Bizarro A, Blesa R, Boada M, Boerwinkle E, Borroni B, **Boschi S**, Bossù P, ... Lambert JC.  
*Nat Genet.* 2022 Apr;54(4):412-436. doi: 10.1038/s41588-022-01024-z. Epub 2022 Apr 4. PMID: 35379992
2. Common variants in Alzheimer's disease and risk stratification by polygenic risk scores.  
de Rojas I, Moreno-Grau S, Tesi N, Grenier-Boley B, Andrade V, Jansen IE, Pedersen NL, Stringa N, Zettergren A, Hernández I, Montreal L, ... Löwenmark M, Hulsman M, Spallazzi M, Pericak-Vance MA, Esiri M, Bernal Sánchez-Arjona M, Dalmaso MC, Martínez-Larrad MT, Arcaro M, Nöthen MM, Fernández-Fuertes M, Dichgans M, Ingelsson M, Herrmann MJ, Scherer M, Vyhalek M, Kosmidis MH, Yannakouli M, Schmid M, Ewers M, Heneka MT, Wagner M, Scamosci M, Kivipelto M, Hiltunen M, Zulaica M, Alegret M, Fornage M, Roberto N, van Schoor NM, Seidu NM, Banaj N, Armstrong NJ, Scarmeas N, Scherbaum N, Goldhardt O, Hanon O, Peters O, Skrobot OA, Quenez O, Lerch O, Bossù P, Caffarra P, Dionigi Rossi P, Sakka P, Mecocci P, Hoffmann P, Holmans PA, Fischer P, Riederer P, Yang Q, Marshall R, Kalaria RN, Mayeux R, Vandenberghe R, Cecchetti R, Ghidoni R, Frikke-Schmidt R, Sorbi S, Hägg S, Engelborghs S, Helisalmi S, Botne Sando S, Kern S, Archetti S, **Boschi S**, ... Fostinelli S, Gil S, Mendoza S, Mead S, Ruiz A.  
*Nat Commun.* 2021 Jun 7;12(1):3417. doi: 10.1038/s41467-021-22491-8. PMID: 34099642
3. Safety and efficacy of avalglucosidase alfa versus alglucosidase alfa in patients with late-onset Pompe disease (COMET): a phase 3, randomised, multicentre trial.  
Diaz-Manera J, Kishnani PS, Kushlaf H, Ladha S, Mozaffar T, Straub V, Toscano A, van der Ploeg AT, Berger KI, Clemens PR, Chien YH, Day JW, Illarioshkin S, Roberts M, Attarian S, Borges JL, Bouhour F, Choi YC, Erdem-Ozdamar S, Goker-Alpan O, Kostera-Pruszyk A, Haack KA, Hug C, Huynh-Ba O, Johnson J, Thibault N, Zhou T, Dimachkie MM, Schoser B; COMET Investigator Group.  
*Lancet Neurol.* 2021 Dec;20(12):1012-1026. doi: 10.1016/S1474-4422(21)00241-6. PMID: 34800399 Clinical Trial.
4. Response to a letter to the editor.  
Rubino E, Zhang M, Mongini T, **Boschi S**, Vercelli L, Vacca A, Govone F, Gai A, Giordana MT, Grinberg M, Rogaeva E, Rainero I.  
*Neurobiol Aging.* 2019 Jun;78:195-196. doi: 10.1016/j.neurobiolaging.2019.02.015. Epub 2019 Mar 1. PMID: 31027854 No abstract available.
5. Alteration of Iron Concentration in Alzheimer's Disease as a Possible Diagnostic Biomarker Unveiling Ferroptosis.  
Ficiarà E, Munir Z, **Boschi S**, Caligiuri ME, Guiot C.  
*Int J Mol Sci.* 2021 Apr 25;22(9):4479. doi: 10.3390/ijms22094479. PMID: 33923052 Review.
6. Magnetic Nanoparticles in the Central Nervous System: Targeting Principles, Applications and Safety Issues.  
D'Agata F, Ruffinatti FA, **Boschi S**, Stura I, Rainero I, Abollino O, Cavalli R, Guiot C.  
*Molecules.* 2017 Dec 21;23(1):9. doi: 10.3390/molecules23010009. PMID: 29267188 Review.

7. Increased orexin A concentrations in cerebrospinal fluid of patients with behavioural variant frontotemporal dementia.  
Roveta F, Marcinnò A, Cremascoli R, Priano L, Cattaldo S, Rubino E, Gallo E, **Boschi S**, Mauro A, Rainero I. *Neurol Sci.* 2022 Jan;43(1):313-317. doi: 10.1007/s10072-021-05250-x. Epub 2021 Apr 27. PMID: 33904007.
  
8. Decreased resistin plasmatic concentrations in patients with Alzheimer's disease: A case-control study.  
Marcinnò A, Gallo E, Roveta F, **Boschi S**, Grassini A, Rainero I, Rubino E. *Heliyon.* 2022 Nov 21;8(11):e11738. doi: 10.1016/j.heliyon.2022.e11738. eCollection 2022 Nov. PMID: 36439765
  
9. Synaptic Proteins as Fluid Biomarkers in Alzheimer's Disease: A Systematic Review and Meta-Analysis.  
Roveta F, Cermelli A, **Boschi S**, Ferrandes F, Grassini A, Marcinnò A, Spina M, Rubino E, Borsello T, Vercelli A, Rainero I. *J Alzheimers Dis.* 2022;90(4):1381-1393. doi: 10.3233/JAD-220515. PMID: 36278349
  
10. A $\beta$ 42 as a Biomarker of Alzheimer's Disease: Is Saliva a Viable Alternative to Cerebrospinal Fluid?  
**Boschi S**, Roveta F, Grassini A, Marcinnò A, Cermelli A, Ferrandes F, Rainero I, Rubino E. *Brain Sci.* 2022 Dec 17;12(12):1729. doi: 10.3390/brainsci12121729. PMID: 36552188
  
11. Investigating p62 Concentrations in Cerebrospinal Fluid of Patients with Dementia: A Potential Autophagy Biomarker In Vivo?  
Rubino E, **Boschi S**, Roveta F, Marcinnò A, Cermelli A, Borghese C, Vigliani MC, Rainero I. *Brain Sci.* 2022 Oct 20;12(10):1414. doi: 10.3390/brainsci12101414. PMID: 36291347
  
12. High Risk of Suicide in Behavioral Variant Frontotemporal Dementia.  
Zucca M, Rubino E, Vacca A, Govone F, Gai A, De Martino P, **Boschi S**, Gentile S, Giordana MT, Rainero I. *Am J Alzheimers Dis Other Demen.* 2019 Jun;34(4):265-271. doi: 10.1177/1533317518817609. Epub 2018 Dec 17. PMID: 30558441
  
13. Polymorphisms of the Proinflammatory Cytokine Genes Modulate the Response to NSAIDs but Not to Triptans in Migraine Attacks.  
Rubino E, Marcinnò A, Grassini A, Piella EM, Ferrandes F, Roveta F, **Boschi S**, Cermelli A, Gallone S, Savi L, Rainero I. *Int J Mol Sci.* 2022 Dec 30;24(1):657. doi: 10.3390/ijms24010657. PMID: 36614097
  
14. Investigating the role of adipokines in chronic migraine.  
Rubino E, Vacca A, Govone F, Gai A, **Boschi S**, Zucca M, De Martino P, Gentile S, Pinessi L, Rainero I. *Cephalalgia.* 2017 Oct;37(11):1067-1073. doi: 10.1177/0333102416665871. Epub 2016 Aug 22. PMID: 27553954

- 15 O057. Altered plasma adipokines concentrations in chronic migraine.  
Rubino E, Govone F, Vacca A, Gai A, **Boschi S**, Zucca M, Pinessi L, Rainero I.  
J Headache Pain. 2015 Dec;16(Suppl 1):A56. doi: 10.1186/1129-2377-16-S1-A56.  
PMID: 28132332
  
- 16 Impact of COVID-19 on chronic migraine treated with erenumab: a case report.  
Grassini A, Marcinnò A, Roveta F, Gallo E, Cermelli A, **Boschi S**, Rubino E, Rainero I.  
Neurol Sci. 2021 Aug;42(8):3079-3081. doi: 10.1007/s10072-021-05329-5. Epub 2021 May 21.  
PMID: 34021438
  
- 17 Mutation analysis of CHCHD2 and CHCHD10 in Italian patients with mitochondrial myopathy.  
Rubino E, Zhang M, Mongini T, **Boschi S**, Vercelli L, Vacca A, Govone F, Gai A, Giordana MT, Grinberg M, Rogaeva E, Rainero I.  
Neurobiol Aging. 2018 Jun;66:181.e1-181.e2. doi: 10.1016/j.neurobiolaging.2018.02.007. Epub 2018 Feb 14.  
PMID: 29519717
  
- 18 Analysis of the DNA methylation pattern of the promoter region of calcitonin gene-related peptide 1 gene in patients with episodic migraine: An exploratory case-control study.  
Rubino E, **Boschi S**, Giorgio E, Pozzi E, Marcinnò A, Gallo E, Roveta F, Grassini A, Brusco A, Rainero I.  
Neurobiol Pain. 2022 Apr 2;11:100089. doi: 10.1016/j.ynpai.2022.100089. eCollection 2022 Jan-Jul  
PMID: 35445161
  
- 19 ATXN2 intermediate repeat expansions influence the clinical phenotype in frontotemporal dementia.  
Rubino E, Mancini C, **Boschi S**, Ferrero P, Ferrone M, Bianca S, Zucca M, Orsi L, Pinessi L, Govone F, Vacca A, Gai A, Giordana MT, Brusco A, Rainero I.  
Neurobiol Aging. 2019 Jan;73:231.e7-231.e9. doi: 10.1016/j.neurobiolaging.2018.09.009. Epub 2018 Sep 22.  
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- 20 In Response to a Letter to the Editor "Frontotemporal Dementia and Suicide: Could Genetics be a Key Factor?"  
Zucca M, Rubino E, Vacca A, Govone F, Gai A, De Martino P, **Boschi S**, Rainero I.  
Am J Alzheimers Dis Other Demen. 2020 Jan-Dec;35:1533317520925980. doi: 10.1177/1533317520925980.  
PMID: 32536192
  
- 21 Machine Learning Profiling of Alzheimer's Disease Patients Based on Current Cerebrospinal Fluid Markers and Iron Content in Biofluids.  
Ficiarà E, **Boschi S**, Ansari S, D'Agata F, Abollino O, Caroppo P, Di Fede G, Indaco A, Rainero I, Guiot C.  
Front Aging Neurosci. 2021 Feb 22;13:607858. doi: 10.3389/fnagi.2021.607858. eCollection 2021.  
PMID: 33692679
  
- 22 Genetic analysis of CHCHD2 and CHCHD10 in Italian patients with Parkinson's disease.  
Rubino E, Brusa L, Zhang M, **Boschi S**, Govone F, Vacca A, Gai A, Pinessi L, Lopiano L, Rogaeva E, Rainero I.  
Neurobiol Aging. 2017 May;53:193.e7-193.e8. doi: 10.1016/j.neurobiolaging.2016.12.027. Epub 2017 Jan 5.  
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- 23 KCNK18 (TRESK) genetic variants in Italian patients with migraine.  
Rainero I, Rubino E, Gallone S, Zavarise P, Carli D, **Boschi S**, Fenoglio P, Savi L, Gentile S, Benna P, Pinessi L, Dalla Volta G.  
Headache. 2014 Oct;54(9):1515-22. doi: 10.1111/head.12439. PMID: 25324165
- 24 Is HCRTR2 a genetic risk factor for Alzheimer's disease?  
Gallone S, **Boschi S**, Rubino E, De Martino P, Scarpini E, Galimberti D, Fenoglio C, Acutis PL, Maniaci MG, Pinessi L, Rainero I.  
Dement Geriatr Cogn Disord. 2014;38(3-4):245-53. doi: 10.1159/000359964. Epub 2014 Jun 25. PMID: 24969517
- 25 Genetic variants in the NOTCH4 gene influence the clinical features of migraine.  
Rubino E, Fenoglio P, Gallone S, Govone F, Vacca A, De Martino P, Giobbe ML, **Boschi S**, Pinessi L, Gentile S, Rainero I.  
J Headache Pain. 2013 Mar 26;14(1):28. doi: 10.1186/1129-2377-14-28. PMID: 23566281
- 26 Differential diagnosis of vacuolar muscle biopsies: use of p62, LC3 and LAMP2 immunohistochemistry.  
Vitonatto E, **Boschi S**, CHIADÒ-Piat L, Ponzalino V, Bortolani S, Brusa C, Rainero I, Ricci F, Vercelli L, Mongini T.  
Acta Myol. 2017 Dec 1;36(4):191-198. eCollection 2017 Dec. PMID: 29770361
- 27 Lack of association between APOE gene polymorphisms and amyotrophic lateral sclerosis: a comprehensive meta-analysis.  
Govone F, Vacca A, Rubino E, Gai A, **Boschi S**, Gentile S, Orsi L, Pinessi L, Rainero I.  
Amyotroph Lateral Scler Frontotemporal Degener. 2014 Dec;15(7-8):551-6. doi: 10.3109/21678421.2014.918149. Epub 2014 Jun 11. PMID: 24918518
- 28 SQSTM1 mutations in frontotemporal lobar degeneration and amyotrophic lateral sclerosis.  
Rubino E, Rainero I, Chiò A, Rogaeva E, Galimberti D, Fenoglio P, Grinberg Y, Isaia G, Calvo A, Gentile S, Bruni AC, St George-Hyslop PH, Scarpini E, Gallone S, Pinessi L; **TODEM Study Group**.  
Neurology. 2012 Oct 9;79(15):1556-62. doi: 10.1212/WNL.0b013e31826e25df. Epub 2012 Sep 12. PMID: 22972638