

CAMILLO PORCARO, Ph.D

Curriculum Vitae

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- Current Positions:**
- **Visiting Professor** - KU Leuven, Department of Human Kinesiology, Movement Control & Neuroplasticity Group, Leuven, Belgium.
<http://www.bindgroup.eu/index.php/camillo-porcaro/>
<http://www.kuleuven.be/wieiswie/en/person/00109412>
 - **Honorary Senior Research Fellow** - School of Psychology, Birmingham University Imaging Centre (BUIC), Birmingham, UK.
<http://www.birmingham.ac.uk/schools/psychology/people/profile.aspx?Referencelid=129283>
 - **Head of the Research hdEEG Lab** - S. Anna Institute and Research in Advanced Neurorehabilitation (RAN), Crotona, Italy
 - **Senior Researcher** - ISTC-CNR, Rome, Italy.
<http://www.istc.cnr.it/it/people/camillo-porcaro>

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- Personal website**
- <http://scholar.google.com/citations?user=vdDvmj0AAAAJ&hl=en>
 - <https://orcid.org/0000-0003-4847-163X>
 - https://www.researchgate.net/profile/Camillo_Porcaro
 - <https://publons.com/author/1287132/camillo-porcaro#profile>
 - <https://loop.frontiersin.org/people/246181/overview>

Employment History

September 2018 – Present

Head of the Research hdEEG Laboratory, S. Anna Institute and Research in Advanced Neurorehabilitation (RAN), Crotona, Italy

January 2017 – present

Honorary Senior Research Fellow, School of Psychology, Birmingham University Imaging Centre (BUIC), Birmingham, UK.

June 2016 – present

Visiting Professor at KU Leuven, Department of Human Kinesiology, Movement Control & Neuroplasticity Research Group, Leuven, Belgium.

September 2015 – present

Adjunct Professor at Department of Information Engineering - Università Politecnica delle Marche, Ancona, IT-60131 Italy. Master course in Biomedical Engineering. Teaching course - Bio-imaging and Brain Research.

June 2014 – September 2015

Visiting Professor, Neural Control of Movement Lab Department of Health Sciences and Technology ETH Zurich, Switzerland.

July 2013 – Present

Visiting Research Fellow, Institute of Neuroscience, Newcastle University, Medical School, Framlington Place, Newcastle upon Tyne, NE2 4HH, UK.

January 2012 – Present

Independent Researcher, Institute of Cognitive Sciences and Technologies (ISTC) – National Research Council (CNR), Rome, Italy.

January 2011 – December 2011

Post-Doc - Independent Research Fellow, Institute of Neuroscience, Newcastle University, Medical School, Framlington Place, Newcastle upon Tyne, NE2 4HH, UK.

March 2008 – December 2010

Post-Doc - Research Fellow, School of Psychology, Birmingham University, Birmingham, UK.
“Development of Single Trial EEG-fMRI: Investigations of Dynamic Brain Function at High Temporal and Spatial Resolution”

April 2007 - March 2008

Research Fellow, Institute for Advanced Biomedical Technologies (ITAB), University of Chieti, Italy. “EEG/MEG Signal analysis during sleep in healthy subjects and patients”.

May - August 2007 - Visiting Research Fellow, Aston University, Birmingham UK. Title of collaboration ‘Evaluation of the performance of linear and non-linear measures of connectivity in bioelectric signals’.

May - August 2006 – Visiting Research Fellow, Aston University, Birmingham UK. Title of collaboration ‘Functional Source Separation applied to induced visual gamma activity’.

July 2004 – March 2007

Research Fellow, AFaR (Association for Research Fatebenefratelli) Center of Medical Statistics and IT, Rome, Italy. Neuroscience Department. Title of research: “Source extraction from Magnetoencephalographic (MEG) recordings to find maturation cortical index”.

Academic History

2004-2008 Ph.D., “Functional Neuroimaging: from cells to systems”. Institute for Advanced Biomedical Technologies (ITAB), Chieti University, Italy (**with honours**). “Development of Tools to Estimate Functional Connectivity among Cerebral Sensorimotor Sources”.

2001-2004 Master II Level, “Bank, Insurance and Finance Management”. Faculty of Economics of the University of Rome “La Sapienza”, Italy. “Applying Independent Component Analysis to Factor Model in Finance”.

1995-2001 Ms Computer Science, Faculty of Science, Mathematics, Physics and Natural of the University of Rome “La Sapienza”, Italy. In collaboration with ISTC-National Research Council (CNR) at the Fatebenefratelli Hospital (Isola Tiberina, Rome, Italy). Dissertation in: *Coherence analysis of bio-electrical signals*.

Academic Appointment

From 30/03/2017 to 30/03/2023

National Scientific Qualification as associate professor in bioengineering (09/G2).

Main Research Interests

- Neural source identification from electrophysiological non-invasive recordings;
- Cerebral sensorimotor cortical function;
- MEG-EEG/fMRI Integration;
- Logical Reasoning and Neuroscience;
- Brain Machine Interface -BMI
- Language: Overt Speech Production
- Human brain imaging;
- Functional Connectivity by MultiVariate AutoRegressive Model (MVAR);
- Fetal Magnetocardiography and Fetal Magnetoencephalography;

I am currently involved in planning, organising and running experiments with different neuroimaging techniques, such as EEG/MEG, fMRI and concurrent EEG/fMRI. As evidenced by my publications and actual and previous positions, I have developed strong collaborations with **Italian, German, Dutch, Belgian, Swiss** and **English** scientists, in various universities and research facilities. The individuals and project areas include:

Italy: **Dr. Tecchio**, Laboratory of Electrophysiology for Translational neuroscience (LET’S)-ISTC-National Research Council CNR (Functional Source Separation, sensorimotor control, fatigue in Multiple Sclerosis);

Prof. Pierelli, Dr. Coppola, University of Rome Sapienza (cortico-subcortical networks, Migraines);

Dr. Di Lorenzo, Prof. Siracusano, Department of Neuroscience University of Rome Tor Vergata (Low and High Frequency Oscillations);

Prof. Abrusci, Prof Casadio, Philosophy Department, University ‘Roma Tre’ (Logic Reasoning);

Prof. Rossini, Dr. Tombini, Dr. Di Pino Clinical Neurology and Biomedical Robotics and Biomicrosystems Lab., Campus BioMedico of Rome University (Robotic Hand Control);

Prof. Romani, Prof. Pizzella, Prof. Zappasodi, Department of Neuroscience and Imaging, University of Chieti-Pescara (Time-frequency analysis, Independent Component Analysis ICA, MEG, EEG, foetal MEG);

Dr. Marco Pagani, senior research scientist (Primo Ricercatore) at the ISTC-CNR and Senior Member of the Neuroimaging Committee of the European Association of Nuclear Medicine (EANM) (Physiopathology of cerebral hemodynamics, metabolism, neuroanatomy and cortical electrical activation (by Single Photon Emission Computed Tomography (SPECT), Positron Emission Tomography (PET) and Magnetic Resonance (MR), electroencephalography (EEG), respectively) applied to neurodegenerative, neurological and psychiatric disorders.

Germany: **Prof. Oswald**, Department of Neurology and Bernstein Centre for Computational Neuroscience, Charité, Berlin, Germany (Information theory);

Dutch: **Dr. Hadjipapas**, Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen (visual induced gamma and evoked activity);

Belgian: **Prof. Mantini**, KU Leuven, Department of Human Kinesiology, Movement Control & Neuroplasticity Group, Leuven (Detecting large-scale networks in the human brain using high-density electroencephalography);

Switzerland: **Prof. Wenderoth**, Neural Control of Movement Lab Department of Health Sciences and Technology ETH Zurich, Switzerland (ageing related changes within cognitive brain areas and to develop new biomarkers);

UK: **Dr. Balsters**, Royal Holloway, University of London (aging, EEG-fMRI Integration);
Prof. Seri, School of Life and Health Sciences, Aston University (Contradictory Reasoning, EEG, MEG);

Prof. Bagshaw, Dr. Mayhew, Dr. Krott, Dr. Rotshtein, School of Psychology and Birmingham University Imaging Centre, University of Birmingham (Logic Reasoning, Overt Speech Production, Development of Single Trial Analysis Tools, fMRI, EEG, concurrent EEG-fMRI);

Prof. Mazaheri, School of Psychology and Birmingham University Imaging Centre, University of Birmingham (How neural fluctuations (quantified using EEG) prior to the onset of an event can bias perception and ultimately behaviour)

Prof. Barnes, Wellcome Trust Centre for Neuroimaging, UCL, London (static and dynamic visual stimulation, MEG and EEG).

Invited Lectures

2018 Campus Biomedico, Roma, Italy. *'Functional Semi-Blind Source Separation Identifies Primary Motor Area without Active Motor Execution.'*

2018 KULeuven, Leuven, Belgium. *'Functional Semi-Blind Source Separation Identifies Primary Motor Area without Active Motor Execution.'*

2015 National MS Center, Melsbroek, Brussels, Belgium. *'M/EEG and simultaneous EEG-fMRI empowered by Functional Source Separation to personalize interventions against Multiple Sclerosis fatigue'*

2015 Department of Health Sciences and Technology Institute of Robotics and Intelligent Systems Rehabilitation Engineering Laboratory, ETH, Zurich, Switzerland. *'MEG and EEG signal processing empowered by Functional Source Separation'*.

- 2014** Department of Health Sciences and Technology, ETH Zurich, Switzerland, '*Semi-Blind Functional Source Separation Algorithm from non-invasive electrophysiology to neuroimaging*'
- 2012** Institute of Neuroscience, Newcastle University, Wolfson Research Centre Campus for Ageing and Vitality, UK. '*Task Contrast Functional Source Separation a novel approach to investigate non-invasive neuroimaging data*'
- 2011** Institute of Neuroscience, Newcastle University, UK. '*From the Cerebral Source Separation using Blind and semi-Blind methods to the Cerebral Network Identification*'.
- 2010** Newcastle University (UK), '*Brain Source Identification using Blind and semi-Blind separation methods in sensory-motor and cognitive tasks*'.
- 2010** Plymouth University (UK), '*Brain Source Identification in Simple and Complex Tasks using Blind and semi-Blind Methods*'.
- 2010** Aston University, Birmingham, UK. '*Dynamics of functional connectivity within the hand somatosensory sub-cortical and cortical network*'.
- 2010** University College London (UK), '*Functional Source Separation improves the data quality during concurrent EEG-fMRI*'
- 2009** International School for Advanced Studies (SISSA – Trieste, Italy). '*Cerebral source identification: from artefact removal to functional source separation*'.
- 2008** University of "Roma Tre", '*Positive*' and '*Negative*' Proposition in logic reasoning: an EEG Study.

Oral Presentation in National and International Conferences

- 2019** Fractal dimension enables the functional differentiation of resting state networks. 25th Annual Meeting of the Organization for Human Brain Mapping, Rome, Italy, June 9-13.
- 2017** Differences in resolving within-language lexical competition for monolingual and bilingual speakers – electrophysiological evidence. 11th International Symposium on Bilingualism, University of Limerick. Ireland.
- 2015** Hand somatosensory Functional Source Separation (FSS) analysis reveals hypoactive sub-cortical source signals in migraine interictally, 60° Congresso Italiano della Società Italiana di Neurofisiologia Clinica, 20-23 May, Verona, Italy.
- 2014** Speech artifacts removal from EEG recordings during overt picture naming: comparison across different methodological approaches. XI National Congress, Associazione Italiana di Scienze Cognitive (AISC), Rome 2-5/12/2014, Italy.
- 2012** '*La contraddittoria aristotelica nel ragionamento: uno studio Elettroencefalografico*' (Translation: *The Aristotelian contradiction in human reasoning: an EEG study*). IX National Congress, Associazione Italiana di Scienze Cognitive (AISC), Rome 3-5/12/2012, Italy.
- 2012** '*Attivazione spazio-temporale dell'attività cerebrale durante interferenza semantica dopo la rimozione degli artefatti muscolari: uno studio EEG*' (Translation: *Spatio-temporal activation of brain activity during semantic interference after muscle artifacts removal: an EEG study*). IX National Congress, Associazione Italiana di Scienze Cognitive (AISC), Rome 3-5/12/2012.
- 2011** '*Functional Source Separation and the Cyber Hand Project*'. Institute of Neuroscience, Newcastle University, UK. Neuroelectronics Brainstorming Workshop. 21st July 2011.
- 2010** '*Primary sensory-motor cortex Activity during voluntary and passive ankle mobilization*'. 29th International Congress of Clinical Neurophysiology (ICCN) 28 October – 1 November 2010. Kobe, Japan.
- 2010** '*Functional source separation improves the quality of single trial visual evoked potentials recorded during concurrent EEG-fMRI*'. 29th International Congress of Clinical Neurophysiology (ICCN) 28 October – 1 November 2010. Kobe, Japan.

Teaching and training activity**2015 - 2019 Master course in Biomedical Engineering.**

Teaching course - Bio-imaging and Brain Research (72 hrs- 9 CFU). Teaching Code B402. Department of Information Engineering - Università Politecnica delle Marche, Ancona, IT-60131 Italy.

2018 Supervisor for:

- Ilaria Ciotti (MS student) Università Politecnica delle Marche, Italy.
- Silvia Mansi (MS student) Università Politecnica delle Marche, Italy.
- Criticus for the master thesis titled Motor adaptability of goal directed arm movements and aging. Student: Christiaan Lewandowsky. Promotor: JJ Orban de Xivry. Co-Promotor: K. Vandevoorde. KU Leuven, Belgium.

2008 - 2012 Supervisor of (1) Research Associate, (2) MS students:

- Maria Teresa Medaglia (Research Associate), Birmingham University, UK.
- Emma Palmer (MS student) Birmingham University, UK
- Filippo Falleri (MS student) Perugia University, Italy.

2008 Tutorial on 'fMRI Artefacts Removal From EEG' Birmingham University, UK.

Fellowship and Research Funding (As a Principal Investigator (PI)):

2017 Short Term Mobility (STM) Travel Grant. Title of the project: ***Electrophysiological signatures of resting-state brain networks relate to their functional role.***

2017 Senior Fellowship KU Leuven (ZKD1331 - SF/16/011 - € 17420). Title of the project: ***'Detecting large-scale networks in the human brain using high-density electroencephalography'***

2016 KU Leuven Special Research Fund (grant C16/15/070)

2016 Royal Society (£ 12000), International Exchanges Scheme 2016/R1- Travel Grant. Title of the project: ***'Identification of a brain network sub-serving predisposition to pain perception'***

2015 Swiss National Science Foundation fellowship, International Short Visits, Swiss National Science Foundation (IZKOZ3_163614 – CHF 9300). ***Title of the project: Functional Source Separation (FSS) - a novel data-driven approach to investigate neural dynamics of the human brain.***

2011-2012 Independent University Research Fellowship (£ 100000), Newcastle University, Institute of Neuroscience.

2011-2012 Royal Society (£ 12000), International Joint Project 2010/R1 - Travel Grant. Title of the project: ***'The key movement controllers: an EEG/fMRI study of the hand network dynamics'***.

2010 Birmingham University Internal Grant (£ 7454), Cutting Edge, (PI). Title of the project: ***'Developing a Protocol for Analyzing EEG Data from Speech Production Studies'***.

2010 Chieti University Internal Grant (€12000), FIS/07, (PI). Title of the project: ***'The neural basis of human fluid intelligence: application of advanced methods for fMRI-EEG integration'***.

Research Funding Award (as Co-Investigator):

2017-18 Supported by FISM - Fondazione Italiana Sclerosi Multipla (€ 40000) - Cod. 2015/R/29 Research Grant ***'Fatigue Relief in Multiple Sclerosis by a home treatment'***. [FaReMuS CuNe-H].

2013-16 Ministry of University and Research (MIUR), Italy (€ 121500), Projects of Relevant National Interest (PRIN), ***'Functional connectivity and neuroplasticity in physiological and pathological aging (CONN-AGE)'***, [2010SH7H3F]

2012-14 "PNR-CNR Aging Program 2012-2014" (€ 15000).

2012-13 Supported by FISM - Fondazione Italiana Sclerosi Multipla (€ 24000) – Cod.2011/R/32, Research Grant ***'Fatigue Relief in Multiple Sclerosis by transcranial Direct Current***

Stimulation (tDCS): can we Differentiate stimulation Targets within the primary sensorimotor cortices? [FaReMuS DiCDiT].

- 2011** Supported by FISM - Fondazione Italiana Sclerosi Multipla (€ 30000) - Cod.2010/R/38, Research Grant '**Fatigue Relief in Multiple Sclerosis by Neuromodulation: a transcranial Direct Current Stimulation (tDCS) Intervention**'. [FaMuSNe].
- 2010** Supported by FISM - Fondazione Italiana Sclerosi Multipla, (€ 60000) - Cod.2009/R/23, Research Grant. '**Fatigue in Multiple Sclerosis: is there a neuroanatomic and functional profile?**' [FaMuS].

Awards & Honours

January 2017 – December 2019

Honorary Senior Research Fellow, School of Psychology, Birmingham University, Birmingham, UK.

July 2016

NeuroImage Editors' Choice Award 2016 conferred for the following paper: "*Global signal modulation of single-trial fMRI response variability: Effect on positive vs. negative BOLD response relationship*"

January 2011 – December 2013

Honorary Research Fellow, School of Psychology, Birmingham University, Birmingham, UK.

- 2012** Di Pino G*, **Porcaro C***, Tombini M, Assenza G, Pellegrino G, Tecchio F, Rossini PM. A neurally-interfaced hand prosthesis tuned inter-hemispheric communication. *Restorative Neurology and Neuroscience*, 30 407-18, 2012. ***These authors contributed equally to this work.**

This paper has been selected by IOS Press, publisher of Restorative Neurology and Neuroscience to be brought to the attention of the media in the September issue (30:5). The news release will be distributed via the scientific news services EurekaAlert (AAAS) and AlphaGalileo, serving primarily UK, Europe and Rest of World.

- <http://www.sciencedaily.com/releases/2012/08/120820114058.htm>
- http://www.iospress.nl/ios_news/neural-interface-for-hand-prosthesis-can-restore-function-in-brain-areas-responsible-for-motor-control/

- 2011** University Research Fellowship, Newcastle University (£ 100000).

- 2010** Best Poster at ICCN2010 28 October – 1 November, Kobe, Japan.

- 2010** International Federation Of Clinical Neurophysiology (IFCN) - Fellowship to attend the International Congress of Clinical Neurophysiology 28 October – 1 November, Kobe, Japan -ICCN2010Award – \$1000.

<http://www.ifcn.info/showcontent.aspx?MenuID=905>

Italian Research Quality Assessment (VQR- Valutazione della Qualità della Ricerca): 2011-14

Products evaluated 2:	Evaluation	Score
<ul style="list-style-type: none"> • Mayhew SD, Ostwald D, Porcaro C, Bagshaw AP. (2013). Spontaneous EEG alpha oscillation interacts with positive and negative BOLD responses in the visual-auditory cortices and DMN. <i>Neuroimage</i>, vol. 76, p. 362-372. 	Excellent	1.00
<ul style="list-style-type: none"> • Mayhew SD, Hylands-White N, Porcaro C, Derbyshire SW, Bagshaw AP. (2013). Intrinsic variability in the human response to pain is assembled from multiple, dynamic brain processes. <i>Neuroimage</i>, vol. 75, p. 68-78. 	Excellent	1.00

Scores legend - Excellent 1.0; High 0.7; Discrete 0.4; Acceptable 0.1; Restricted 0;

Editorial Board Activity**Associate Editor for:**

- **Frontiers in Human Neuroscience** (Impact Factor: 3.209)
<http://loop.frontiersin.org/people/246181/overview>
- **Frontiers in Neuroscience**
Brain Imaging Methods section (Impact Factor: 3.566)
<http://loop.frontiersin.org/people/246181/overview>
- **Journal of Biomedicine and Biotechnology (BioMed Research International) Neuroscience section** (Impact Factor: 2.134)
ISSN: 2314-6133
<https://www.hindawi.com/journals/bmri/editors/neuroscience/>
- **Signal Processing Research**
ISSN Online: 2327-171X; ISSN Print: 2327-1701
http://www.seipub.org/spr/PageInfo.aspx?PARAMS=VGI0bGVeRWRpdG9yaWFsIEJvYXJkXkZpbGVOYW1lXkVkaXRvcmlhbEJvYXJkLmh0bQ_0_0
- **Scientifica (Neuroscience section)**
ISSN: 2090-908X
<https://www.hindawi.com/journals/scientifica/editors/neuroscience/>
- **Journal of Signal and Information Processing**
ISSN Online: 2159-4481; ISSN Print: 2159-4465
<http://www.scirp.org/journal/jsip/>
- **Journal of Neuroscience and Neurological Disorders**
ISSN: 2454-4981
<http://www.heighpubs.com/jnnd/editors.php>
- **International Journal of Neurology Research**
ISSN: 2313-5611
<http://www.ghrnet.org/index.php/ijnr>
- **Neurology and Neuroscience**
ISSN: 2386-687X
<https://www.publishopenaccess.com/journals/list-of-journals/neurology-and-neuroscience/>
- **Journal of Computational Medicine**
ISSN Online: 2314-5099; ISSN Print: 2314-5080
<https://www.hindawi.com/archive/editors/>
- **Information Systems and Signal Processing Journal**
<http://www.clausiuspress.com/journal/ISSPJ/editorialBoard.html>
- **Insights in Psychology**
<http://oprscience.com/department/insights-in-psychology/>

Invited to be part of expert pool for:

- **TBM-programme funding**
The Research Foundation - Flanders (FWO, www.fwo.be) is the foundation that supports fundamental and strategic research of universities, university hospitals and other strategic research centers in the Flemish Community (Belgium).
One of the FWO funding programmes is the TBM-programme: funding for applied biomedical research with a primary societal aim. This funding programme aims to support late stage research projects that lead to the implementation of new therapies, diagnostic techniques or preventive methods, which would otherwise not reach the patient due to a lack of industrial interest.
<http://www.fwo.be/en/fellowships-funding/research-projects/tbm-projects/>

Invited Peer Reviewer

- Neuroimage
- Scientific Report
- Human Brain Mapping
- Journal of Headache and Pain
- Journal of Neural Engineering
- Clinical Neurophysiology
- Plos ONE
- Behavioural Brain Research
- IEEE Trans. on Biomed. Engineering
- IEEE J. of Biom. & Health Inform.
- Experimental Brain Research
- Journal of Neuroscience Methods
- Early Human Development
- Inverse Problems
- Medical Engineering & Physics
- Computers in Biology and Medicine
- Biomedical Signal Processing & Control
- IEEE Tran. on Audio, Speech&Language Proc.
- Medical & Biological Engineering & Computing
- Intern. Journal of Human-Computer Interaction
- IEEE Transactions on Circuits and Systems II
- Medical Biological Eng. & Computing
- Journal of Signal and Inf. Processing
- Scientifica (Neuroscience sec.)
- Journal of Computational Medicine
- Signal Processing Research
- Biomedical signal processing Control
- Computer Methods and Programs in Biomed.
- Springer chapter book.

Invited evaluator for:

2016 - Peer reviewer for the Italian Research Quality Assessment (VQR) 2011-2014.

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| ● 252286 (GEV 11.b) | ● 275118 (GEV 6) | ● 319017 (GEV 6) |
| ● 26038 (GEV 6) | ● 16555 (GEV 9) | ● 150098 (GEV 6) |
| ● 179924 (GEV 9) | ● 150098 (GEV 6) | ● 179924 (GEV 9) |
| ● 350884 (GEV 9) | | |

2016 Postdoctoral Fellowship (Application number: 12N6417N). The Research Foundation - Flanders (Fonds Wetenschappelijk Onderzoek - Vlaanderen, FWO) is an independent funding agency that supports fundamental research in all disciplines in Flanders (Belgium).

2016 INCOMING [Pegasus]² Marie Sklodowska-Curie Fellowship (Application number: 12G9417N).

2016 Part of the panel for the Call for Proposals n. ISTC-AdR-230-2016-RM on the 22/04/2016

2015 FWO Fellowship (Application number: 12K7716N).

2014 Scientific Independence of young Researchers SIR MIUR (RBSI1413TP) as rapporteur

2014 Scientific Independence of young Researchers SIR MIUR (RBSI14DL11)

2013 University of Leuven (KU Leuven) BZAPS/14/009 Professorship.

Publication overview (full paper)¹

56 Full paper published. H-index: 24 (24 Papers cited more than 24 times); i10-index: 38 (i10-index is the number of publications with at least 10 citations). Total citations: 1383

¹ Source Citations: Google Scholar.