
PERSONAL DATA

Birth	June 27, 1973, Chenee (Belgium)
Nationalities	German and French (dual citizenship)
Languages	French, German, English, Italian (all fluent), Dutch (basic)
Family status	Male, Married, 2 children
URL	christiankeyzers.com
GoogleScholar	personal profile

EMPLOYMENT HISTORY

2010 - now	Department Head Comparative Social Neuroscience, Netherlands Institute for Neuroscience (NIN), Royal Netherlands Academy for Arts and Sciences, Amsterdam, The Netherlands [tenured]
2014 - now	Full Prof. for Social Neuroscience, Department of Psychology, University of Amsterdam, The Netherlands [tenured]
2007 - 2014	Full Prof. for the Social Brain, University Medical Center and University of Groningen, The Netherlands [tenured]
2007 - 2010	Scientific Director, BCN NeuroImaging Centre, Groningen, The Netherlands
2005 - 2007	Associate Prof., Scientific Director, BCN NeuroImaging Centre, University Medical Center and University of Groningen, The Netherlands [tenure track]
2004 - 2005	Assistant Professor, BCN NeuroImaging Centre, University of Groningen, Netherlands [tenure track]
2000 - 2004	PostDoc, Department of Neuroscience, University of Parma, Italy [fellowship] Post-doctoral fellow with G. Rizzolatti investigating the mirror system in monkeys and humans.

EDUCATION

1997 - 2000	University of St Andrews, School of Psychology, Scotland. Ph.D. with D.I. Perrett on visual perception and single neurons in the Superior Temporal Sulcus of the macaque monkey.
1991 - 1997	University of Konstanz and University of Bochum, Germany. Master in psychology with a minor in biology. Grade: highest possible grade (1) for all examinations and the thesis.
1993 - 1994	University of Massachusetts at Boston (U-Mass), Harvard and MIT., USA. Independent research projects in neurosciences. Grade point average 4.0 (<i>very good</i>).
1987 - 1991	European School of Munich, Germany. July 1991: European baccalaureate with a grade of 87% (best of the year).

MAJOR GRANTS (≥200k€)

2023 - 2028	NWO ENW open competition XL grant "Brain-wide dynamics for socially-mediated memory acquisition" [shared PI with Valeria Gazzola and Francesco Battaglia], 3088k€
2023 - 2033	NWO gravity grant "Growing Up Together in Society (GUTS)" [co-PI of a consortium lead by E. Crone], 22M€
2022 - 2025	NWO ENW open competition M grant "Towards a circuit level understanding of emotional contagion", 350k€
2016 - 2022	NWO VICI grant "From vicarious activations to neurons and social behaviour - a cross-species approach", 1500k€
2013 - 2017	ERC consolidator grant "Cracking the code and flow of empathy", 1780k€
2011 - 2015	NIHC grant "Theory of Mind and Mirror Neurons in autism", 500k€
2010 - 2014	N.W.O. Excellence Network "Development of Joint Actions", 500k€ [co-PI with Rainer Goebel and Harold Bekkering]
2010 - 2014	NIHC grant "Neural Markers of Psychiatric Disorders", 400k€
2009 - 2013	N.W.O. MaGW open competition grant (200k€)
2005 - 2010	European Marie Curie Excellence Grant (~1.4M€)
2004 - 2009	VIDI grant of the dutch science foundation N.W.O. (~1M€)

PRIZES AND HONOURS

2020	Fellow of the Association for Psychological Science
2017	Member of the European Science Foundation College of Experts.
2016	Elected Member of the Academia Europaea
2016	NWO VICI personal grant (1500k€)
2014	Elected to the Board of the Young Academy of Europe
2013	Elected Member to the Young Academy of Europe
2013	Maximum possible rating (world class) at the KNAW peer-review of the NIN
2012	ERC consolidator grant (1780k€)
2005	Researcher of the Year Award of the UMCG (100k€)
2004	Marie Curie Excellence Award for outstanding research (50k€)
2005 – 2006	Visiting professor at Caltech
2012	IPPY prize for “The Empathic Brain”, Best Independent Science Book 2012

EDITORIAL ACTIVITIES

2023	Guest Editor, Special issue on Interacting Brains, <i>Neuroscience & Biobehavioral Reviews</i>
2018	Guest Editor, Special Issue on Social Neuroscience, <i>Current Opinions in Psychology</i>
2012 – 2018	Member of Editorial Board, <i>Phil Trans Royal Soc B</i>
2006 – now	Associate Editor of the journal <i>Social Neuroscience</i>
2007 – now	Associate Editor of the journal <i>Social Affective and Cognitive Neuroscience</i>

SERVICE TO THE FIELD AND COMMISSIONS OF TRUST

Reviewer	Reviewer for Science, Nature, Nature Neuroscience, Neuron, TiCS, PNAS, PLoS, Current Biology, Cerebral Cortex, NeuroImage, SCAN and Social Neuroscience.
Grant Evaluations	National: Member of the evaluation board of the NWO VENI and VICI schemes. Internationally: Co-Chair Marie Curie ITN (2012), Member of the ESF College of Expert Reviewers
Advisory Boards	Member of the board of advisors for Future and Emerging Technologies in Horizon 2020 (2015-2017) Chair of the Program Committee of the Spinoza Center for Neuroimaging, KNAW, Amsterdam
Learned Academies	Member of the Young Academy of Europe (2013-2018, now alumni). Member of the Academia Europaea (2016-now).
Management	Member of the board of the Young Academy of Europe (Chair of Humanities and Social Sciences, organizer of the panel on open science, 2014-2017). Scientific Director Neuroimaging Center (2007-2010).

PUBLICATION SUMMARY

Web of Sci **110 Publications, H=55, >17k citations**

Google **H=66, >36k citations**

Amongst the World's top 2% of Scientists lifelong impact of Stanford University
(<https://doi.org/10.1371/journal.pbio.3000918>)

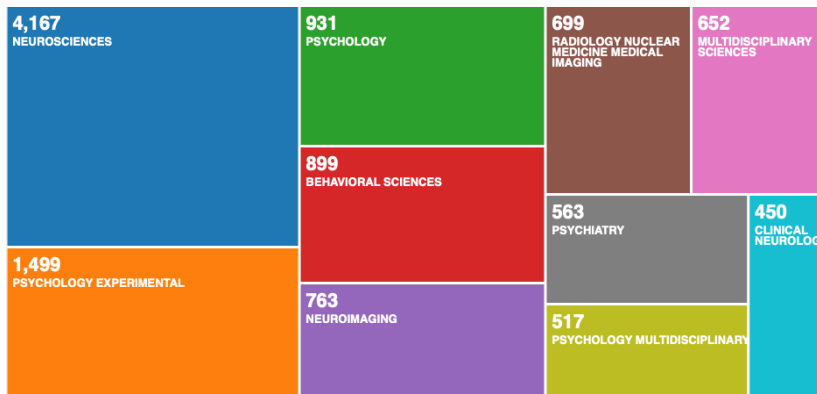


Figure 1: Field of origin of the papers citing my work according to WoS

Top 10 Publications (citations as per google

scholar in brackets):

- 2023 Qin C, Michon F, Onuki Y, Ishishita Y, Otani K, Kawai K, Fries P, Gazzola V, and Keysers C. Predictability Alters Information Flow during Action Observation in Human Electroencephalographic Activity. **Cell Reports** 42. <https://doi.org/10.1016/j.celrep.2023.113432>.
- 2022 (36) Keysers C, Knapska E, Moita MA, Gazzola V. Emotional contagion and prosocial behavior in rodents. **Trends in Cognitive Sciences**. <https://doi.org/10.1016/j.tics.2022.05.005>
- 2020 (64) Hernandez-Lallement J, Attah AT, Soyman E, Pinhal CM, Gazzola V & Keysers C. Harm to Others Acts as a Negative Reinforcer in Rats. **Curr. Biol.** 30: 949-961.e7. <https://doi.org/10.1016/j.cub.2020.01.017>
- 2020 (237) Keysers C, Gazzola V & Wagenmakers EJ. Using Bayes factor hypothesis testing in neuroscience to establish evidence of absence. **Nat. Neurosci.** 23: 788-799. <https://doi.org/10.1038/s41593-020-0660-4>
- 2019 (182) Carrillo M, Han Y, Migliorati F, Liu M, Gazzola V, Keysers C, Emotional Mirror Neurons in the Rat's Anterior Cingulate Cortex; **Curr Biol** 29:1301-1312.e6.
- 2015 (312) Cerliani L, Mennes M, Thomas RM, Di Martino A, Thioux M & Keysers C. Increased functional connectivity between subcortical and cortical resting-state networks in autism spectrum disorder. **JAMA Psychiatry** 72, 767-777.
- 2013 (398) Meffert H, Gazzola V, den Boer JA, Bartels AAJ & Keysers C. Reduced spontaneous but relatively normal deliberate vicarious representations in psychopathy. **Brain** 136, 2550-2562
- 2010 (983) Keysers C, Kaas JH & Gazzola V. Somatosensation in social perception. **Nat. Rev. Neurosci.** 11, 417-428
- 2004 (1252) Keysers C, Wicker B, Gazzola V, Anton JL, Fogassi L & Gallese V. A touching sight: SII/PV activation during the observation and experience of touch. **Neuron** 42, 335-346
- 2003 (3328) Wicker B, Keysers C, Plailly J, Royet JP, Gallese V, Rizzolatti G. Both of us disgusted in my insula: the common neural basis of seeing and feeling disgust. **Neuron** 40, 655-664
- 2002 (2781) Kohler E, Keysers C, Umiltà MA, Fogassi L, Gallese V & Rizzolatti G. Hearing sounds, understanding actions: Action representation in mirror neurons. **Science** 297, 846-848

PEER REVIEWED PUBLICATIONS

- 2023 Qin C, Michon F, Onuki Y, Ishishita Y, Otani K, Kawai K, Fries P, Gazzola V, and Keysers C. Predictability Alters Information Flow during Action Observation in Human Electroencephalographic Activity. **Cell Reports** 42. <https://doi.org/10.1016/j.celrep.2023.113432>.
- 2023 Fornari L, Ioumpa K, Nostro AD, Evans NJ, De Angelis L, Speer SPH, Paracampo R, Gallo S, Spezio M, Keysers C* & Gazzola V*. Neuro-computational mechanisms and individual biases in action-outcome learning under moral conflict. **Nature Communications**, 14(1), 1218. <https://doi.org/10.1038/s41467-023-36807-3>
- 2023 Speer S, Keysers C, Campdepadrós Barrios J, Teurlings CJS, Smidts A, Boksem MAS, Wager TD, Gazzola V. A Multivariate Brain Signature for Reward. **NeuroImage** 271: 119990. <https://doi.org/10.1016/j.neuroimage.2023.119990>.
- 2023 Packheiser J, Soyman E, Paradiso E, Michon F, Ramaaker E, Sahin N, Muralidharan S, Wöhr M, Gazzola V, Keysers C. "Audible Pain Squeaks Can Mediate Emotional Contagion across Pre-Exposed Rats with a Potential Effect of Auto-Conditioning." **Communications Biology** 6: 1085. <https://doi.org/10.1038/s42003-023-05474-x>.
- 2023 Keysers C, Gazzola V. Vicarious Emotions of Fear and Pain in Rodents." **Affective Science**. <https://doi.org/10.1007/s42761-023-00198-x>.
- 2023 Michon F, Packheiser J, Gazzola V, Keysers C. Sharing Positive Affective States Amongst Rodents. **Affective Science** 4: 475-79. <https://doi.org/10.1007/s42761-023-00201-5>.
- 2022 Keysers C, Knapska E, Moita MA, Gazzola V. Emotional contagion and prosocial behavior in rodents. **Trends in Cognitive Sciences**. <https://doi.org/10.1016/j.tics.2022.05.005>

- 2022 Cerliani, Bhandari, De Angelis, van der Zwaag, Bazin, Gazzola*, Keyzers*. Predictive coding during action observation - a depth-resolved intersubject functional correlation study at 7T. *Cortex*: 121-38. <https://doi.org/10.1016/j.cortex.2021.12.008>.
- 2021 Keyzers C & Gazzola V. Emotional contagion: Improving survival by preparing for socially sensed threats. *Curr Biol*. 31, R728-730. <https://doi.org/10.1016/j.cub.2021.03.100>
- 2021 Paradiso E, Gazzola V & Keyzers C. Neural mechanisms necessary for empathy-related phenomena across species. *Curr. Opin. Neurobiol.* 68, 107-115. <https://doi.org/10.1016/j.conb.2021.02.005>
- 2020 Keyzers C, Gazzola V & Wagenmakers EJ Using Bayes factor hypothesis testing in neuroscience to establish evidence of absence. *Nat. Neurosci.* 23, 788-799. <http://www.nature.com/articles/s41593-020-0660-4>
- 2020 Hernandez-Lallement J, Attah A, Soyman E, Pinhal C, Gazzola V & Keyzers C. Harm to Others Acts as a Negative Reinforcer in Rats. *Curr. Biol.* 30, 949-961.e7. <http://www.ncbi.nlm.nih.gov/pubmed/32142701>
- 2020 Borja Jimenez KC, Abdelgabar A, De Angelis L, McKay LS, Keyzers C* & Gazzola V*. Changes in brain activity following the voluntary control of empathy. *Neuroimage* 216, <https://pubmed.ncbi.nlm.nih.gov/31931155/>
- 2020 Caspar EA, Ioumpa K, Keyzers C*, Gazzola V*. Obeying orders reduces vicarious brain activation towards victims' pain. *Neuroimage*. 2020 222:117251. <https://doi.org/10.1016/j.neuroimage.2020.117251>
- 2020 Han Y, Sichterman B, Carrillo M, Gazzola V & Keyzers C. Similar levels of emotional contagion in male and female rats. *Sci. Rep.* 10, 2763. <http://www.ncbi.nlm.nih.gov/pubmed/32066797>
- 2020 Gallo S, Baaijen J, Suttrup J, Fernandes-Henriques C, Paracampo R, Keyzers C & Gazzola V. Bayesian statistics show a lack of change in excitability following bi-hemispheric HD-TDCS over the primary somatosensory cortices. *Brain Stimulation* 13:640-642. <https://pubmed.ncbi.nlm.nih.gov/32289690/>
- 2019 Han Y, Bruls R, ..., Gazzola V, Carrillo M, Keyzers C. Bidirectional cingulate-dependent danger information transfer across rats. *Plos Biology* 17:e3000524, <https://doi.org/10.1371/journal.pbio.3000524>
- 2019 Abdelgabar AR, Suttrup J, Broersen R, Bhandari R, Picard S, Keyzers C*, De Zeeuw Cl*, Gazzola* Action perception recruits the cerebellum and is impaired in spinocerebellar ataxia patients. *Brain* 142:3791-3805. <https://doi.org/10.1093/brain/awz337>
- 2019 Carrillo M, Han Y, Migliorati F, Liu M, Gazzola V, Keyzers C, Emotional Mirror Neurons in the Rat's Anterior Cingulate Cortex; *Curr Biol* 29:1301-1312.e6.
- 2019 Nastase SA, Gazzola V, Hasson U, Keyzers C. Measuring shared responses across subjects using intersubject correlation. *SCAN* 14:669-687.
- 2019 Müller-Pinzler L, Czekalla N, Mayer AV, Stolz DS, Gazzola V, Keyzers C, Paulus FM, Krach S. Negativity-bias in forming beliefs about own abilities. *Sci. Rep.* 9, 14416. <https://doi.org/10.1038/s41598-019-50821-w>
- 2019 Kompier NF, Keyzers C, Gazzola V, Lucassen PJ, Krugers HJ. Early Life Adversity and Adult Social Behavior: Focus on Arginine Vasopressin and Oxytocin as Potential Mediators. *Front Behav Neurosci* 13:143 <https://doi.org/10.3389/fnbeh.2019.00143> .
- 2018 Gallo S, Paracampo R, Müller-Pinzler L, Severo MC, Blömer L, Fernandes-Henriques C, Henschel A, Lammes BK, Maskaljunas T, Suttrup J, Avenanti A, Keyzers C, Gazzola V. The causal role of the somatosensory cortex in prosocial behaviour. *eLife* 7:e32740
- 2019 Cracco E, Keyzers C, Clauwaert A, Brass M. Representing Multiple Observed Actions in the Motor System. *Cereb Cortex* 29:3631-3641
- 2018 Thomas RM, De Sanctis T, Gazzola V, Keyzers C. Where and how our brain represents the temporal structure of observed action. *Neuroimage* 183:677-97.
- 2018 Keyzers C, Paracampo R, Gazzola V. What neuromodulation and lesion studies tell us about the function of the mirror neuron system and embodied cognition. *Curr Opin Psychol* 24:35-40.
- 2018 Amodio D & Keyzers C. Editorial overview: New advances in social neuroscience: From neural computations to social structures. *Curr Opin Psychol* 24:iv-vi.
- 2017 Modinos G, McLaughlin A, Egerton A, McMullen K, Kumari V, Barker G, Keyzers C, and Williams S. Corticolimbic Hyperresponse to Emotion and Glutamatergic Function in People with High Schizotypy: A Multimodal fMRI-MRS Study. *Translational Psychiatry* 7:e1083. <https://doi.org/10.1038/tp.2017.53>.
- 2016 Zaki J, Wager TD*, Singer T*, Keyzers C*, Gazzola, V*. The Anatomy of Suffering: Understanding the relationship between nociceptive and empathic pain. *Trends in Cognitive Sciences* 20, 249-259.
- 2016 Valchev N, Gazzola V, Avenanti A, Keyzers C. Primary somatosensory contribution to action observation brain activity-combining fMRI and cTBS. *SCAN* 11:1205-1217.
- 2016 Etzel J, Valchev N, Gazzola V, Keyzers C. Is Brain Activity during Action Observation Modulated by the Perceived Fairness of the Actor? *Plos One* 11, e0145350
- 2016 Keyzers C & Gazzola V. A plea for Cross-species Social Neuroscience. *Current Topics in Behavioral Neurosciences*
- 2015 Cerliani L, Mennes M, Thomas RM, Di Martino A, Thioux M & Keyzers C. Increased functional connectivity between subcortical and cortical resting-state networks in autism spectrum disorder. *JAMA Psychiatry* 72, 767-777.
- 2015 Keyzers C. The straw man in the brain. *Science* 347, 240 [book review]
- 2015 Müller-Pinzler L, Gazzola V, Keyzers C, Sommer J, Jansen A, Frässle S, ... Krach S. Neural pathways of embarrassment and their modulation by social anxiety. *NeuroImage*, 119, 252-261.
- 2015 Valchev N, Curcic-Blake, B, Renken, RJ, Avenanti, A, Keyzers, C, Gazzola, V & Maurits, NM. cTBS delivered to the left somatosensory cortex changes its functional connectivity during rest. *NeuroImage* 114, 386-397.
- 2015 Cui F, Abdelgabar AR, Keyzers C & Gazzola V. Responsibility modulates pain-matrix activation elicited by the expressions of others in pain. *NeuroImage* 114, 371-378.
- 2015 Bos PA, Montoya, ER, Hermans, EJ, Keyzers, C & van Honk, J. Oxytocin reduces neural activity in the pain circuitry when seeing pain in others. *NeuroImage* 113, 217-224.
- 2015 Valchev N, Zijdwind, I, Keyzers, C, Gazzola, V, Avenanti, A & Maurits, NM Weight dependent modulation of motor resonance induced by weight estimation during observation of partially occluded lifting actions. *Neuropsychologia* 66, 237-245.
- 2015 Carrillo M, Migliorati F, Bruls R, Han Y, Heinemans M, Pruis I, ... Keyzers, C. Repeated Witnessing of Conspecifics in Pain: Effects on Emotional Contagion. *Plos one*, 10(9), e0136979.
- 2015 Thioux M & Keyzers C. Object visibility alters the relative contribution of ventral visual stream and mirror neuron system to goal anticipation during action observation. *Neuroimage* 105, 380-394
- 2014 Keyzers C, Perrett DI & Gazzola V. Hebbian Learning is about contingency, not contiguity, and explains the emergence of predictive mirror neurons. *Behav. Brain Sci.* 37, 205-206
- 2014 Keyzers C, Meffert H & Gazzola V. Reply: Spontaneous versus deliberate vicarious representations: different routes to empathy in psychopathy and autism. *Brain* 137
- 2014 Keyzers C & Gazzola V. Dissociating the ability and propensity for empathy. *Trends Cogn. Sci.* 18, 163-166
- 2014 Keyzers C & Gazzola V. Hebbian learning and predictive mirror neurons for actions, sensations and emotions. *Philos. Trans. R. Soc. B-Biol. Sci.* 369
- 2014 Engel A, Hijmans BS, Cerliani L, Bangert M, Nanetti L, Keller PE & Keyzers C. Inter-individual differences in audio-motor learning of piano melodies and white matter fiber tract architecture. *Hum. Brain Mapp.* 35, 2483-2497
- 2014 Di Martino A, Yan CG, Li Q, Denio E, Castellanos FX, Alaerts K, Anderson JS, Assaf M, Bookheimer SY, Dapretto M, Dean B, Delmonte S, Dinstein I, Ertl-Wagner B, Fair DA, Gallagher L, Kennedy DP, Keown CL, Keyzers C, Lainhart JE, Lord C, Luna B, Menon V, Minshew NJ, Monk CS, Mueller S, Muller RA, Nebel MB, Nigg JT, O'Hearn K, Pelphrey KA, Peltier SJ, Rudie JD, Sunaert S, Thioux M, Tyszka JM, Uddin LQ, Verhoeven JS, Wenderoth N, Wiggins JL, Mostofsky SH & Milham MP. The autism brain imaging data exchange: towards a large-scale evaluation of the intrinsic brain architecture in autism. *Mol. Psychiatr.* 19, 659-667

- 2014 Cui F, Arnstein D, Thomas RM, Maurits NM, Keysers C & Gazzola V. Functional Magnetic Resonance Imaging Connectivity Analyses Reveal Efference-Copy to Primary Somatosensory Area, BA2. *PLoS One* 9
- 2013 Meffert H, Gazzola V, den Boer JA, Bartels AAJ & Keysers C. Reduced spontaneous but relatively normal deliberate vicarious representations in psychopathy. *Brain* 136, 2550-2562
- 2013 Pineda JA, Grichanik M, Williams V, Trieu M, Chang H & Keysers C. EEG sensorimotor correlates of translating sounds into actions. *Front. Neurosci.* 7
- 2013 Monfardini E, Gazzola V, Boussaoud D, Brovelli A, Keysers C & Wicker B. Vicarious Neural Processing of Outcomes during Observational Learning. *PLoS One* 8
- 2013 Mihov Y, Kendrick KM, Becker B, Zschernack J, Reich H, Maier W, Keysers C & Hurlmann R. Mirroring Fear in the Absence of a Functional Amygdala. *Biol. Psychiatry* 73, E9-E11
- 2013 Lee TMC, Sun DL, Leung MK, Chu LW & Keysers C. Neural activities during affective processing in people with Alzheimer's disease. *Neurobiol. Aging* 34, 706-715
- 2012 Hasson U, Ghazanfar AA, Galantucci B, Garrod S & Keysers C. Brain-to-brain coupling: a mechanism for creating and sharing a social world. *Trends Cogn. Sci.* 16, 114-121
- 2012 Gazzola V, Spezio ML, Etzel JA, Castelli F, Adolphs R & Keysers C. Primary somatosensory cortex discriminates affective significance in social touch. *Proc. Natl. Acad. Sci. U. S. A.* 109, E1657-E1666
- 2012 Keysers C. The Primate Mind: Built to Connect With Other Minds. *Nature* 482, 158-159 [book review]
- 2012 Engel A, Bangert M, Horbank D, Hijmans BS, Wilkens K, Keller PE & Keysers C. Learning piano melodies in visuo-motor or audio-motor training conditions and the neural correlates of their cross-modal transfer. *Neuroimage* 63, 966-978
- 2012 Cerliani L, Thomas RM, Jbabdi S, Siero JCW, Nanetti L, Crippa A, Gazzola V, D'Arceuil H & Keysers C. Probabilistic tractography recovers a rostrocaudal trajectory of connectivity variability in the human insular cortex. *Hum. Brain Mapp.* 33, 2005-2034
- 2011 Schippers MB, Renken R & Keysers C. The effect of intra- and inter-subject variability of hemodynamic responses on group level Granger causality analyses. *Neuroimage* 57, 22-36
- 2011 Schippers MB & Keysers C. Mapping the flow of information within the putative mirror neuron system during gesture observation. *Neuroimage* 57, 37-44
- 2011 Quadflieg S, Etzel JA, Gazzola V, Keysers C, Schubert TW, Waiter GD & Macrae CN. Puddles, Parties, and Professors: Linking Word Categorization to Neural Patterns of Visuospatial Coding. *J. Cogn. Neurosci.* 23, 2636-2649
- 2011 Kokal I, Engel A, Kirschner S & Keysers C. Synchronized Drumming Enhances Activity in the Caudate and Facilitates Prosocial Commitment - If the Rhythm Comes Easily. *PLoS One* 6
- 2011 Keysers C & McKay LS. How to Make Social Neuroscience Social. *Psychol. Inq.* 22, 210-216
- 2011 Etzel JA, Valchev N & Keysers C. The impact of certain methodological choices on multivariate analysis of fMRI data with support vector machines. *Neuroimage* 54, 1159-1167
- 2011 Bastiaansen JA, Thioux M, Nanetti L, van der Gaag C, Ketelaars C, Minderaa R & Keysers C. Age-Related Increase in Inferior Frontal Gyrus Activity and Social Functioning in Autism Spectrum Disorder. *Biol. Psychiatry* 69, 832-838
- 2011 Bastiaansen JA, Meffert H, Hein S, Huizinga P, Ketelaars C, Pijnenborg M, Bartels A, Minderaa R, Keysers C & de Bildt A. Diagnosing Autism Spectrum Disorders in Adults: the Use of Autism Diagnostic Observation Schedule (ADOS) Module 4. *J. Autism Dev. Disord.* 41, 1256-1266
- 2011 Atsak P, Orre M, Bakker P, Cerliani L, Roozendaal B, Gazzola V, Moita M & Keysers C. Experience Modulates Vicarious Freezing in Rats: A Model for Empathy. *PLoS One* 6
- 2011 Arnstein D, Cui F, Keysers C, Maurits NM & Gazzola V. mu-Suppression during Action Observation and Execution Correlates with BOLD in Dorsal Premotor, Inferior Parietal, and SI Cortices. *J. Neurosci.* 31, 14243-14249
- 2010 Schippers MB, Roebroek A, Renken R, Nanetti L & Keysers C. Mapping the information flow from one brain to another during gestural communication. *Proc. Natl. Acad. Sci. U. S. A.* 107, 9388-9393
- 2010 Kokal I & Keysers C. Granger Causality Mapping during Joint Actions Reveals Evidence for Forward Models That Could Overcome Sensory-Motor Delays. *PLoS One* 5
- 2010 Keysers C, Kaas JH & Gazzola V. Somatosensation in social perception. *Nat. Rev. Neurosci.* 11, 417-428
- 2010 Keysers C & Gazzola V. Social Neuroscience: Mirror Neurons Recorded in Humans. *Curr. Biol.* 20, R353-R354
- 2010 Hurlmann R, Walter H, Rehme AK, Kukulja J, Santoro SC, Schmidt C, Schnell K, Musshoff F, Keysers C, Maier W, Kendrick KM & Onur OA. Human amygdala reactivity is diminished by the beta-noradrenergic antagonist propranolol. *Psychol. Med.* 40, 1839-1848
- 2009 Schippers MB, Gazzola V, Goebel R & Keysers C. Playing Charades in the fMRI: Are Mirror and/or Mentalizing Areas Involved in Gestural Communication? *PLoS One* 4
- 2009 Perrett DI, Xiao DK, Barraclough NE, Keysers C & Oram MW. Seeing the future: Natural image sequences produce anticipatory neuronal activity and bias perceptual report. *Q. J. Exp. Psychol.* 62, 2081-2104
- 2009 Onur OA, Walter H, Schlaepfer TE, Rehme AK, Schmidt C, Keysers C, Maier W & Hurlmann R. Noradrenergic enhancement of amygdala responses to fear. *Soc. Cogn. Affect. Neurosci.* 4, 119-126
- 2009 Nanetti L, Cerliani L, Gazzola V, Renken R & Keysers C. Group analyses of connectivity-based cortical parcellation using repeated k-means clustering. *Neuroimage* 47, 1666-1677
- 2009 Kokal I, Gazzola V & Keysers C. Acting together in and beyond the mirror neuron system. *Neuroimage* 47, 2046-2056
- 2009 Keysers C & Gazzola V. Expanding the mirror: vicarious activity for actions, emotions, and sensations. *Curr. Opin. Neurobiol.* 19, 666-671
- 2009 Keysers C. Mirror neurons. *Curr. Biol.* 19, R971-R973
- 2009 Gazzola V & Keysers C. The Observation and Execution of Actions Share Motor and Somatosensory Voxels in all Tested Subjects: Single-Subject Analyses of Unsmoothed fMRI Data. *Cereb. Cortex* 19, 1239-1255
- 2009 Etzel JA, Gazzola V & Keysers C. An introduction to anatomical ROI-based fMRI classification analysis. *Brain Res.* 1282, 114-125
- 2009 Del Giudice M, Manera V & Keysers C. Programmed to learn? The ontogeny of mirror neurons. *Dev. Sci.* 12, 350-363
- 2009 Bastiaansen JA, Thioux M & Keysers C. Evidence for mirror systems in emotions. *Philos. Trans. R. Soc. B-Biol. Sci.* 364, 2391-2404
- 2008 Thioux M, Gazzola V & Keysers C. Action understanding: How, what and why. *Curr. Biol.* 18, R431-R434
- 2008 Kukulja J, Schlafker TE, Keysers C, Klingmuller D, Maier W, Fink GR & Hurlmann R. Modeling a Negative Response Bias in the Human Amygdala by Noradrenergic-Glucocorticoid Interactions. *J. Neurosci.* 28, 12868-12876
- 2008 Keysers C & Fadiga L. The mirror neuron system: New frontiers. *Soc. Neurosci.* 3, 193-198
- 2008 Jabbi M & Keysers C. Inferior Frontal Gyrus Activity Triggers Anterior Insula Response to Emotional Facial Expressions. *Emotion* 8, 775-780
- 2008 Jabbi M, Bastiaansen J & Keysers C. A Common Anterior Insula Representation of Disgust Observation, Experience and Imagination Shows Divergent Functional Connectivity Pathways. *PLoS One* 3
- 2008 Etzel JA, Gazzola V & Keysers C. Testing Simulation Theory with Cross-Modal Multivariate Classification of fMRI Data. *PLoS One* 3
- 2007 van der Gaag C, Minderaa RB & Keysers C. The BOLD signal in the amygdala does not differentiate between dynamic facial expressions. *Soc. Cogn. Affect. Neurosci.* 2, 93-103
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