

Katherine S.H. Matho, PhD
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American & French Dual Citizen

EDUCATION

2009-2013 PhD in Neuroscience, Université Pierre et Marie Curie, Paris, France.
Dissertation: "Structure and dynamism in a central neural circuit in adulthood and postnatal development"
June 2013 Electrophysiology & Imaging course, Ecole des Neurosciences de Paris, France.
July 2011 Circuits and Connectivity course, Cold Spring Harbor Laboratory, New York.
2008-2009 MS in Neuroscience, Université Pierre et Marie Curie, Paris, France.
MS thesis: "Chemorepulsion by Sema3A in oligodendrocyte recruitment during myelin repair"
2003-2007 Honor's BS in Biology, Union College, Schenectady, NY.
Honor's thesis: "Eye movements for prey capture by dragonfly larvae"

RESEARCH EXPERIENCE

Oct. 2015 – present Post-doctoral Associate, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.
Supervisor: Dr. Z. Josh HUANG
2014-2015 Post-doctoral Associate, Ecole Polytechnique, Palaiseau, France.
Supervisor: Dr. Emmanuel BEAUREPAIRE, Lab for Optics and Biosciences
2009-2013 PhD research, Institut de la Vision, France.
PhD supervisor: Dr. Jean LIVET Development of neural circuits.
2008-2009 Master's research, Hôpital de la Pitié-Salpêtrière, CRICM, Paris, France.
Supervisor: Dr. Catherine LUBETZKI, Multiple Sclerosis and myelination.
2007-2008 Post-baccalaureate IRTA, National Institutes of Health, Bethesda, MD,
Supervisor: Dr. Howard NASH, Genetic mechanisms underlying anesthesia
2003-2007 Undergraduate research, Union College, Schenectady, NY.
Supervisor: Dr. Robert OLBERG, Biological Sciences and Neurobiology.

RESEARCH SKILLS

- 3D reconstruction of neuronal circuitry (image registration, segmentation)
- Multi-channel tiled mosaic image acquisition with single and two-photon microscopy
- Stereotaxic viral injection in the brain
- Molecular and cell culture techniques; viral production
- Anatomy and histology: immunocytochemistry, in situ hybridization, tissue sectioning
- Generation and maintenance of transgenic mouse lines
- ImageJ/Fiji software macro language
- Adobe Photoshop, Illustrator, In Design, Microsoft Office

PUBLICATIONS

Under review:

0) Abdeladim L, Matho KS, Clavreul S, Mahou P, Sintès JM, Solinas X, Arganda-Carreras I, Turney SG, Lichtman JW, Bemelmans AP, Loulier K, Supatto W, Livet J, Beaurepaire E. Multicolor multiscale brain imaging with chromatic serial multiphoton microscopy.

In preparation:

- 1) Matho K, Vuillemin N, Supatto W, Mou D, Zhang M, Mahou P, Loulier K, Barry R, Bemelmans A, Turney S, Lichtman JW, Bradley J, Beaurepaire E, Livet J. Connectomic study of convergence and structural dynamism in a central neuronal circuit.
- 2) Matho K, Barry R, Livet J. Novel mutually incompatible lox sites for multiplexed independent Cre recombination.
- 3) Matho KS, Galbavy W, Shetty A, An X, Palaniswamy R, He M, Levine J, Huilgol D, Tucciarone J, Narasimhan A, Umadevi Venkataraju K, Raudales R, Wu P, Osten P, Arlotta P, Huang ZJ Genetic targeting of glutamatergic pyramidal neuron subpopulations in the cerebral cortex

Referenced in PubMed:

- 3) Loulier K, Barry R, Mahou P, Le Franc Y, Supatto W, Matho K, Ieng S, Fouquet S, Benosman R, Chédotal A, Beaurepaire E, Morin X, Livet J (2014). Multiplex cell and lineage tracking with Brainbow transgenes, *Neuron*. 81:3:505-520.
- 4) Namsolleck P, Boato F, Schwengel K, Paulis L, Matho K, Geurts N, Thöne-Reineke C, Lucht K, Seidel K, Hallberg A, Dahlöf B, Unger T, Hendrix S, Steckelings UM (2013). AT2-receptor stimulation enhances axonal plasticity after spinal cord injury by upregulating BDNF expression, *Neurobiology of Disease*. 51:177-191.
- 5) Mahou P, Zimmerly M, Loulier K, Matho K, Labroille G, Morin X, Supatto W, Livet J, Débarre D, Beaurepaire E (2012). Multicolor twophoton tissue Imaging by wavelength unmixing, *Nature Methods*. 9:815-8
- 6) Piaton G, Aigrot MS, Williams A, Moyon S, Tepavcevic V, Moutkine I, Gras J, Matho K, Schmitt A, Soellner H, Huber AB, Ravassard P, Lubetzki C (2011). Class 3 semaphorins influence oligodendrocyte precursor recruitment and remyelination in adult central nervous system, *Brain*. 134:4:1156-67.

Book chapters and didactic publications:

- ° Fouquet S, Matho K, Loulier K, Bauer E, Livet J (2010) Brainbow: un kaléïdoscope moléculaire pour visualiser les neurones. *Biofutur*. 308: 24-29
- ° Goureau O, Terray A, Matho K, Reichman S, Orioux, G. Stem cells in the retina: regeneration and cell therapy. *Stem Cell Biology and Regenerative Medicine*, 549–574. 2014 River Publishers.

ABSTRACTS, PRESENTATIONS AND COURSE LECTURES

Presentations and lectures:

- 1) Matho K Genetic targeting of glutamatergic pyramidal neurons in cerebral cortex for the Mouse Mini-atlas Project, BCDC/BICCN Workshop, Allen Institute, Seattle, WA March 23, 2018. Short talk
- 2) Genetic targeting of glutamatergic pyramidal neurons in cerebral cortex, Cold Spring Harbor Laboratory In-House Symposium XXXI, November 20, 2017. Poster
- 3) Matho K Connectomics: wiring diagram of the human brain I, Bordeaux Sept. 22-26, 2014. Invited speaker.
- 4) Matho K (Dec. 11 2013) Journée RPPA, Jussieu, Paris, France. Short talk.
- 5) Matho K, Zhang M, Loulier K, Mou D, Fouquet S, Barry R, Turney S, Lichtman JW, Livet J (May 23-25 2012) UPMC / ED3C Graduate School retreat, Roscoff, France. Short talk.
- 6) Matho K (March 26 2013) Module Imagerie Cellulaire, Université Pierre et Marie Curie. Course lecture.
- 7) Matho K, Zhang M, Barry R, Turney S, Lichtman JW, Livet J (Sept. 16-17 2010) ENP days, Deauville, France. Short Talk.

Posters:

- 8) Matho K, Vuillemin N, Supatto W, Mahou P, Zhang M, Barry R, Bemelmans A, Lichtman JW, Bradley J, Beaurepaire E, Livet J (March 24-28 2015) "Wiring The Brain" CSHL, NY.
- 9) Matho K, Vuillemin N, Supatto W, Mahou P, Zhang M, Barry R, Bemelmans A, Lichtman JW, Bradley J, Beaurepaire E, Livet J (Dec. 4-5 2014) France. Emerging Imaging Technologies in Neuroscience.
- 10) Matho K, Supatto W, Vuillemin N, Mahou P, Zhang M, Mou D, Barry R, Turney S, Fouquet S, Bemelmans A, Lichtman JW, Bradley J, Beaurepaire E, Livet J (March 22-26 2014) EMBO, Israel.
- 11) Matho K, Supatto W, Vuillemin N, Mahou P, Zhang M, Mou D, Barry R, Turney S, Fouquet S, Bemelmans A, Lichtman JW, Bradley

Katherine S.H. Matho, PhD

J, Beaufrepaire E, Livet J (Oct. 18 2013) IFM Colloquium, Paris, France.

12) Matho K, Zhang M, Loulier K, Mou D, Fouquet S, Barry R, Turney S, Lichtman JW, Livet J (Sept. 15-16 2011) IDV Retreat, Beauval, France.

13) Matho K, Zhang M, Loulier K, Mou D, Fouquet S, Barry R, Turney S, Lichtman JW, Livet J (Sept. 11-14 2011) MPG-HHMI

Conference "High Resolution Circuit Reconstruction" Janelia Farm, VA.

14) Matho K, Zhang M, Loulier K, Mou D, Fouquet S, Barry R, Turney S, Lichtman JW, Livet J (September 7-9 2011) ENP Days, Collège des Bernardins, Paris, France. Poster Prize.

15) Matho K, Loulier K, Mou D, Zhang M, Fouquet S, Barry R, Turney S, Lichtman JW, Livet J (May 24-26 2011) 10th Colloquium Société Française des Neurosciences, Marseille, France.

16) Loulier K, Barry R, Matho K, Fouquet S, Livet J. (May 19-22 2011) Cortical Development, Chania, Greece.

17) Matho K, Zhang M, Loulier K, Mou D, Fouquet S, Barry R, Turney S, Lichtman JW, Livet J (June 21 2010) SAB Meeting, Paris, France

18) & 19) Matho K, Zhang M, Loulier K, Mou D, Fouquet S, Lichtman JW, Livet J (March 11 2010) UPMC/ED3C Graduate School Symposia (Sept. 20-23 2009 & March 11 2010), Paris, France.

STUDENT SUPERVISION

- 4 graduate students: Morgane Roche (Summer 2014); Tom Freundlich (MD/PhD rotation Summer 2010);

Sebastien Valderverde (Spring 2010); Morgane Boillot (Spring 2010)

- 1 undergraduate student: Marie Guirguis (Summer 2013)

SCIENTIFIC WRITING & EDITING

- Writer for ERANET-NEURON II: 30-page report on 2-day meeting "Synaptopathies," Bonn, Germany May 2014

- Editor for the AERES report of Institut de la Vision, Dec. 2012 (800 pages)

- Scientific editing of various articles and abstracts, Institut de la Vision, October 2009-present

LEADERSHIP EXPERIENCE

- Career Symposium Organizer ENP, Paris, France (Jan. 25, 2012): Organized multi-disciplinary career workshop

- Graduate school representative ENP, Paris, France (2010–11): Coordinated academic and social events, mentored

peer students, acted as liaison between students and faculty

LANGUAGE COMPETENCY

- English & French: native languages (written/reading/spoken); German: Basic (written/reading/spoken)

HONORS & AWARDS

- Fondation pour la Recherche Médicale, Paris, France Oct. '12-Oct.'13—Bourse fin de thèse : 31,000 eur

- Ecole des Neurosciences de Paris - Master's & PhD Award, Paris, France, Oct.'08-Oct.'12 : 79,200 eur

- National Institutes of Health IRTA Fellowship, Bethesda, MD, Aug.'07-Oct.'08 : 27,200 USD

- Union College Dean's Scholarship, Schenectady, NY, Sep.'03-Jun.'07 : 99,400 USD

- Poster prize winner, Neuroscience Workshop Saclay 2014: Emerging Imaging Technologies in Neuroscience.

- Image selected for the 2014 Small World Competition (Image of distinction)

- Image selected for the postage stamp celebrating INSERM's 50th Anniversary

- "Bioscapes" Digital imaging competition. Two images selected for Honorable Mention.

- Ecole des Neurosciences de Paris – ENP Days, Sept 2011 & 2012: Poster prize winner.

REFERENCES

Z. Josh Huang, Ph.D.

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