

FABIEN CIGNETTI, Ph.D

né le 25/12/1982 à Moûtiers (73), France
recruté le 01/09/2017 à l'Université Grenoble-Alpes
Maître de Conférences (CNU 74)

Unité de Recherche : TIMC – UMR 5525
Équipe "Biomécamot"

Département d'enseignement : UFR STAPS, UGA

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**PARCOURS ACADEMIQUE**

2013 – 2017	Chercheur postdoctoral, Laboratoire de Neurosciences Cognitives, UMR 7291 CNRS & Aix-Marseille Université.
2012 – 2013	Ingénieur hospitalier, Assistance Publique des Hôpitaux de Marseille.
2010 – 2012	Chercheur postdoctoral, Nebraska Biomechanics Core Facility, University of Nebraska at Omaha, USA.
2007 – 2009	Doctorant, Laboratoire de Physiologie de L'Exercice, EA 4338, Université Savoie Mont-Blanc Center of Bioengineering & Motor Sciences, University of Trento, Italy.

DIPLOMES UNIVERSITAIRES

2007-09	Doctorat STAPS, Université Savoie Mont-Blanc
2006	M2R Biologie, Sport, Santé, Université Jean Monnet
2005	M1 Ingénierie et Ergonomie de l'Activité Physique, Université Savoie Mont-Blanc

ACTIVITE PROFESSIONNELLE

Recherche : mes travaux étudient les relations unissant cerveau et motricité. L'objectif est d'identifier les modifications fonctionnelle et structurelle cérébrales qui conditionnent l'amélioration de la motricité de l'individu sur diverses échelles de temps (courte : apprentissage moteur ; longue : développement & vieillissement moteur). Elles combinent paradigmes comportementaux, enregistrements de l'activité cérébrale acquis par EEG et IRM, et modélisation. Mes projets portent sur les processus cérébraux d'acquisition et de consolidation des mémoires motrices, et plus récemment sur la gestion de l'effort lors de la production motrice.

Mots-Clés : Neurosciences Cognitives, Contrôle Moteur, Neuroimagerie, Connectomique, Machine Learning

Métriques : h-index : 18 Publications (peer-reviewed journals) : 34 Citations : 16/item

Site web : https://www.researchgate.net/profile/Fabien_Cignetti <https://orcid.org/0000-0002-9050-8056>

Enseignements : une majorité d'enseignements sur les principes de contrôle moteur, l'apprentissage moteur, l'ontogénèse et le vieillissement des fonctions motrices. ~250 heures/an.

FINANCEMENT DE RECHERCHE

2022-25	SEISM - Sense of Effort in SensoriMotor Adaptation. CDT CerCog@UGA ; co-PI 10k€
2022-25	Stut&Learn - Learning/Retention in people who stutter. IRGA ; co-PI 140k€
2019-23	PRESAGE - Syndrome démentiel : vers un diagnostic plus précoce. FEDER (EU) + CARSAT; co-PI 448k€
2019-20	BRAVA - Brain Plasticity to Visuo-Motor and Audio-Motor Adaptation. ANR-15-IDEX-02; co-PI 53k€
2017-19	Brain signatures of motor memory acquisition and consolidation in adults and children. ANR-15-IDEX-02; PI 160k€.

ENCADREMENT**Docs**

mars 2023- E. Ronayette-Lamoine. Sense of effort in auditory-motor adaptation. Co-encadrant. Directrice: Maeva Garnier (GIPSA-Lab, Grenoble)

2014-17 A. Fontan. La construction du schéma corporel dans un cerveau en développement. Co-encadrant. Directrice : C. Assaiante (LNC, Marseille). PMID: 28314184 DOI: 10.1016/j.dcn.2017.02.010 ; PMID: 26733535 DOI: 10.1093/cercor/bhv323

Post-docs

2021-22 J. Lefort-Besnard. PMID: 37689017 DOI: 10.1016/j.neurobiolaging.2023.07.006

2020-21 L. Struber. PMID: 34687861 DOI: 10.1016/j.neuroimage.2021.118645

Masters

janv-avr 2024 C. Machinal. M1 recherche ENS Rennes 2SEP

mai-juil 2022 M. Latil. 2ème année Grenoble INP - ENSE3 / PHELMA, filière SICOM

janv-juin 2018 D. Fauvel. Master 2 STAPS.

1. Lefort-Besnard J, Naveau M, Delcroix N, Decker LM, **Cignetti F**; Alzheimer's Disease Neuroimaging Initiative. Grey matter volume and CSF biomarkers predict neuropsychological subtypes of MCI. *Neurobiol Aging*. 2023 Nov;131:196-208.
2. Nemmi F*, **Cignetti F**, Vaugoyeau M, Assaiante C, Chaix Y, Péran P. Developmental dyslexia, developmental coordination disorder and comorbidity discrimination using multimodal structural and functional neuroimaging. *Cortex*, 2023, 160:43-54. *: equal contribution to the work
3. Lesourd M, Afyouni A, Geringswald F, **Cignetti F**, Raoul L, Sein J, Nazarian B, Anton JL, Grosbras MH. Action Observation Network activity related to object-directed and socially-directed actions in Adolescents. *J Neurosci*. 2022 Nov 7;JN-RM-1602-20.
4. Baudou E, Nemmi F, Peran P, **Cignetti F**, Blais M, Maziero S, Tallet J, Chaix Y. Atypical connectivity in the cortico-striatal network in NF1 children and its relationship with procedural perceptual-motor learning and motor skills. *J Neurodev Disord*. 2022 Mar 1;14(1):15
5. Fontan A, **Cignetti F**, Vaugoyeau M, Assaiante C. Strength of the perception action coupling in human body discrimination tasks. *Hum Mov Sci* 2022 Oct;85:102993.
6. Struber L, Baumont M, Barraud PA, Nougier V, **Cignetti F**. Brain oscillatory correlates of visuomotor adaptive learning. *Neuroimage*. 2021 Dec 15;245:118645.
7. Baudou E, Nemmi F, Biotteau M, Maziero S, Assaiante C, **Cignetti F**, Vaugoyeau M, Audic F, Peran P, Chaix Y. Are morphological and structural MRI characteristics related to specific cognitive impairments in neurofibromatosis type 1 (NF1) children? *Eur J Paediatr Neurol*. 2020 Sep;28:89-100.
8. Vaugoyeau M, **Cignetti F**, Eusebio A, Azulay JP. Subthalamic Deep Brain Stimulation Modulates Proprioceptive Integration in Parkinson's Disease During a Postural Task. *Neuroscience*. 2020 Jun 15;437:207-214.
9. **Cignetti F**, Nemmi F, Vaugoyeau M, Girard N, Albaret JM, Chaix Y, Péran P, Assaiante C. Intrinsic Cortico-Subcortical Functional Connectivity in Developmental Dyslexia and Developmental Coordination Disorder. *Cereb Cortex Commun*. 2020 Apr 6;1(1):tgaa011.
10. Nemmi F, **Cignetti F**, Assaiante C, Maziero S, Audic F, Péran P, Chaix Y. Discriminating between neurofibromatosis-1 and typically developing children by means of multimodal MRI and multivariate analyses. *Hum Brain Mapp*. 2019 Aug 15;40(12):3508-3521.
11. **Cignetti F**, Vaugoyeau M, Decker LM, Grosbras MH, Girard N, Chaix Y, Péran P, Assaiante C. Brain network connectivity associated with anticipatory postural control in children and adults. *Cortex*. 2018 Nov;108:210-221.
12. **Cignetti F**, Vaugoyeau M, Fontan A, Jover M, Livet MO, Hugonenq C, Audic F, Chabrol B, Assaiante C. Feedforward motor control in developmental dyslexia and developmental coordination disorder: Does comorbidity matter? *Res Dev Disabil*. 2018 May;76:25-34.
13. **Cignetti F**, Chabeauti PY, Menant J, Anton JL, Schmitz C, Vaugoyeau M, Assaiante C. Gravity Cues Embedded in the Kinematics of Human Motion Are Detected in Form-from-Motion Areas of the Visual System and in Motor-Related Areas. *Front Psychol*. 2017 Aug 17;8:1396.
14. Belghali M, Chastan N, **Cignetti F**, Davenne D, Decker LM. Loss of gait control assessed by cognitive-motor dual-tasks: pros and cons in detecting people at risk of developing Alzheimer's and Parkinson's diseases. *Geroscience*. 2017 Jun;39(3):305-329.
15. **Cignetti F**, Afyouni A. Action Organization in Lateral Occipitotemporal Cortex. *J Neurosci*. 2017 May 17;37(20):5048-5050.
16. Fontan A, **Cignetti F**, Vaugoyeau M, Nazarian B, Anton JL, Assaiante C. How does the body representation system develop in the human brain? *Dev Cogn Neurosci*. 2017 Apr;24:118-128.
17. Decker LM, **Cignetti F**, Hunt N, Potter JF, Stergiou N, Studenski SA. Effects of aging on the relationship between cognitive demand and step variability during dual-task walking. *Age (Dordr)*. 2016 Aug;38(4):363-375.
18. **Cignetti F**, Salvia E, Anton JL, Grosbras MH, Assaiante C. Pros and cons of using the informed basis set to account for hemodynamic response variability with developmental data. *Front Neurosci*. 2016 Jul 15;10:322.
19. **Cignetti F**, Fontan A, Menant J, Nazarian B, Anton JL, Vaugoyeau M, Assaiante C. Protracted development of the proprioceptive brain network during and beyond adolescence. *Cereb Cortex*. 2017 Feb 1;27(2):1285-1296.
20. **Cignetti F**, Vaugoyeau M, Nazarian B, Roth M, Anton JL, Assaiante C. Boosted Activation of Right Inferior Frontoparietal Network: A Basis for Illusory Movement Awareness. *Hum Brain Mapp*. 2014 Oct;35(10):5166-78.
21. Assaiante C, Barlaam F, **Cignetti F**, Vaugoyeau M. Body schema building during childhood and adolescence: A neurosensory approach. *Neurophysiol Clin*. 2014 Jan;44(1):3-12.
22. **Cignetti F**, Zedka M, Vaugoyeau M, Assaiante C. Independent walking as a major skill for the development of anticipatory postural control: evidence from adjustments to predictable perturbations. *PLoS One* 2013;8(2):e56313
23. Decker LM, **Cignetti F**, Stergiou N. Executive function orchestrates regulation of task-relevant gait fluctuations. *Gait Posture* 2013; 38(3):537-40.

24. **Cignetti F**, Chabeauti PY, Sveistrup H, Vaugoyeau M, Assaiante C. Updating process of internal models of action as assessed from motor and postural strategies in children. *Neuroscience* 2013;233:127-38.
25. **Cignetti F**, Caudron S, Vaugoyeau M, Assaiante C. Body schema disturbance in adolescence: from proprioceptive integration to the perception of human movement. *J Mot Learn Dev* 2013;1:49-58
26. **Cignetti F**, Decker LM, Stergiou N. Sensitivity of the Wolf's and Rosenstein's algorithms to evaluate local dynamic stability from small gait data sets: Response to Commentaries by Bruijn et al. *Ann Biomed Eng* 2012;40(12):2507-09.
27. Decker LM, **Cignetti F**, Potter JF, Studenski SA, Stergiou N. Use of Motor Abundance in Young and Older Adults during Dual-Task Treadmill Walking. *PLoS One* 2012;7(7):e41306.
28. Decker LM, **Cignetti F**, Stergiou N. Wearing a safety harness during treadmill walking influences lower extremity kinematics mainly through changes in ankle regularity and local stability. *J Neuroeng Rehabil* 2012;9:8.
29. **Cignetti F**, Decker LM, Stergiou N. Sensitivity of the Wolf's and Rosenstein's algorithms to evaluate local dynamic stability from small gait data sets. *Ann Biomed Eng* 2012;40(5):1122-30.
30. **Cignetti F**, Kyvelidou A, Harbourne RT, Stergiou N. Anterior-posterior and medial-lateral control of sway in infants during sitting acquisition does not become adult-like. *Gait Posture* 2011;33(1):88-92.
31. Decker LM, **Cignetti F**, Stergiou N. Complexity and human gait. *Revista Andaluza de Medicina del Deporte* 2010;3(1):3-13.
32. **Cignetti F**, Schena F, Mottet D, Rouard A. A limit-cycle model of leg movements in cross-country skiing and its adjustments with fatigue. *Hum Mov Sci* 2010;29(4):590-604.
33. **Cignetti F**, Schena F, Rouard A. Effects of fatigue on inter-cycle variability in cross-country skiing. *J Biomech* 2009;42(10):1452-9.
34. **Cignetti F**, Schena F, Zanone PG, Rouard A. Dynamics of coordination in cross-country skiing. *Hum Mov Sci* 2009;28(2):204-17.

CHAPITRE D'OUVRAGE

Cignetti F, Caudron S, Dalibert D, Vaugoyeau M, Assaiante C. Perturbation du schéma corporel à l'adolescence : quelles répercussions sur l'intégration proprioceptive posturale et perceptive ? In: M. Hamaoui et M. Lacour (Eds). *Du contrôle postural à l'exécution du mouvement*. De Boeck - Solal, pp 53-72, 2012.

COMMUNICATIONS ORALES EN CONGRÈS

nom souligné lorsque orateur

1. Struber L, Baumont M, Barraud P-A, Nougier V, **Cignetti F**. "Error-based learning of motor behavior in 8- to 12-year-old children", XXVIIIe Congrès SOFPEL, 1-3 Décembre 2022. Marseille, France
2. Struber L, Baumont M, Barraud P-A, Nougier V, **Cignetti F**. "Decoding motor error processing and sensorimotor remapping during adaptation through phase and amplitude components of the EEG signal", SFN Global Connectome, Virtual Conference, Society for Neuroscience, 11-13 January 2021
3. Assaiante C, Vaugoyeau M, **Cignetti F**. Contrôle anticipé chez des enfants de 8 à 12 ans avec des troubles des apprentissages : importance de la comorbidité. XXVIème Congrès de la SOFPEL, 4 et 5 Décembre 2019. Montréal, Canada.
4. Assaiante C, Vaugoyeau M, Girard N, **Cignetti F**. A brain-behavioral study of motor learning in typically developing children and children with learning disorders. NeuroFrance, May 22-24 2019, Marseille, France.
5. Fontan A, **Cignetti F**, Vaugoyeau M, Assaiante C. Maturation du réseau d'intégration proprioceptive lors d'une vibration musculo-tendineuse en IRMf : une nouvelle façon d'étudier la construction du schéma corporel. SOFPEL Conference. *Neurophysiol Clin* 2014;44(5).
6. **Cignetti F**, Vaugoyeau M, Nazarian B, Roth M, Anton JL, Assaiante C. Bases corticales de la sensation de mouvement illusoire. SOFPEL Conference. *Neurophysiol Clin* 2014;44(1):124.
7. Assaiante C, **Cignetti F**, Vaugoyeau M. Action and Representation of Action during Childhood and Adolescence: A Functional Approach. The SKILLS Conference, 2011, Montpellier, France.
8. **Cignetti F**, Schena F, Rouard A. Effect of fatigue on dynamical model of the cross-country cycle. 3rd International Congress Mountain and Sport, 2009, Rovereto, Italy.

POSTERS EN CONGRÈS

nom souligné lorsque présentateur

1. Lefort-Besnard J, Naveau M, Delcroix N, **Cignetti F***, Decker LM*. Patterns of brain atrophy and cerebrospinal fluid biomarkers predictive of empirically-derived MCI subtypes. OHBM annual congress, June 19-23 2022, Glasgow, Scotland. *: equal contribution to the work
2. **Cignetti F**, Vaugoyeau M, Fontan A, Jover M, Livet MO, Hugonenq C, Audic F, Chabrol B, Assaiante C. Feedforward motor control in developmental dyslexia and developmental coordination disorder: does comorbidity matter? ISPGW World Congress 2019 June 30 - July 4, Edinburgh, Scotland.
3. **Cignetti F**, Vaugoyeau M, Girard N, Chaix Y, Péran P, Assaiante C. Neural signatures of developmental dyslexia and developmental coordination disorder. OHBM annual congress, June 9-13 2019, Rome, Italy.

4. Nemmi F, **Cignetti F**, Assaiante C, Maziero S, Audi F, Péran P, Chaix Y. Discriminating neurofibromatosis and healthy children with multimodal MRI and machine learning. OHBM annual congress, June 9-13 2019, Rome, Italy.
5. Lesourd M, Afyouni A, Gerinswald F, Raoul L, **Cignetti F**, Sein J, Nazarian B, Anton JL, Grosbras MH. Brain activity during transitive and social action observation in adults and adolescents. OHBM annual congress, June 9-13 2019, Rome, Italy.
6. **Cignetti F**, Nemmi F, Vaugoyeau M, Girard N, Chaix Y, Péran P, Assaiante C. Atypical cortico-subcortical functional connectivity in developmental dyslexia and developmental coordination disorder. NeuroFrance, May 22-24 2019, Marseille, France.
7. **Cignetti F**, Vaugoyeau M, Fontan A, Decker LM, Girard N, Chaix Y, Péran P, Grosbras MH, Assaiante C. Emergence of anticipatory motor control from interactions between brain networks during development. OHBM annual congress, 2017, Vancouver, British Columbia, Canada.
8. Fontan A, **Cignetti F**, Vaugoyeau M, Assaiante C. Exploration des bases neurales des représentations du corps en action : étude développementale. SOFPEL Conference- Neurophysiol Clin 2016;46(4-5).
9. **Cignetti F**, Vaugoyeau M, Fontan A, Nazarian B, Anton JL, Assaiante C. The restructured connectivity of the proprioceptive brain network through adolescence. OHBM annual congress, 2015, Honolulu, Hawaii, USA.
10. Fontan A, **Cignetti F**, Nazarian B, Anton JL, Vaugoyeau M, Assaiante C. Cerebral network subtending proprioceptive processing in children from 7 to 10 years. Congress of the International Society for Posture and Gait Research, 2015, Seville, Spain.
11. Fontan A, **Cignetti F**, Vaugoyeau M, Assaiante C. Impact of self-movement generation on the discrimination of human body posture: a perception-action coupling study in children from 7 to 10 years old. 11th International Conference on Developmental Coordination Disorder, 2015, Toulouse, France.
12. Fontan A, **Cignetti F**, Vaugoyeau M, Assaiante C. Incidence de l'exécution de mouvements sur la discrimination visuelle d'items posturaux chez l'enfant et l'adulte. SOFPEL Conference- Neurophysiol Clin 2015;45(4-5):400.
13. Assaiante C, **Cignetti F**, Fontan A, Nazarian B, Roth M, Anton JL, Vaugoyeau M. Developmental changes in the cerebral network of proprioceptive processing from adolescence to adulthood. 44th Annual Meeting of the Society for Neuroscience, 2014, Washington, USA.
14. **Cignetti F**, Vaugoyeau M, Nazarian B, Roth M, Anton JL, Assaiante C. Developmental changes in the cerebral network of proprioceptive processing from adolescence to adulthood. 44th Annual Meeting of the Society for Neuroscience, 2014, Washington, USA.
15. Assaiante C, Caudron S, **Cignetti F**, Fortin C, Vaugoyeau M. Proprioceptive Integration in Adolescent Idiopathic Scoliosis. Congress of the International Society for Posture and Gait Research, 2012, Trondheim, Norway.
16. **Cignetti F**, Zedka M, Vaugoyeau M, Assaiante C. L'acquisition de la marche autonome enrichit le modèle interne sensorimoteur : mise en évidence à partir de l'anticipation posturale de perturbations externes répétitives. SOFPEL Conference. Neurophysiol Clin 2012;42:p390.
17. Decker LM, **Cignetti F**, Stergiou N. Régulation de la variabilité du pas pendant la marche : une dichotomie nécessaire entre persistance et anti-persistance. SOFPEL Conference. Neurophysiol Clin 2012;42:p395.
18. **Cignetti F**, Stergiou N. Evidence of different control processes in the maintenance of standing and sitting posture. 40th Annual Meeting of the Society for Neuroscience, 2010, San Diego, USA.
19. **Cignetti F**, Kyvelidou A, Harbourne RT, Stergiou N. Development of sitting postural control: relationships between coordination and centre of pressure measures. International Conference on Infant Studies (Biennial Meeting), 2010, Maryland, USA.
20. Haworth JL, **Cignetti F**, Kokkoni E, Harbourne RT, Stergiou N. Beneficial effect of perceptual-motor intervention with surface vibrations on postural function of infants with cerebral palsy. NASPSPA Conference (North American Society for the Psychology of Sport & Physical Activity), Arizona, USA. J Sport Exerc Psychol 2010;33(suppl):pS16.
21. Kokkoni E, **Cignetti F**, Haworth JL, Harbourne RT, Stergiou N. Eight-month-old infants are able to disregard altered somatosensory information to maintain a stable sitting posture. NASPSPA Conference (North American Society for the Psychology of Sport & Physical Activity), Arizona, USA. J Sport Exerc Psychol 2010;33(suppl):pS32.
22. Tan CW, **Cignetti F**, Haworth J, Harbourne R, Corr B, Stergiou N. Reliability of the Balance-O-Gram as a device for sitting posture evaluation in infants. NASPSPA Conference (North American Society for the Psychology of Sport & Physical Activity), Arizona, USA. J Sport Exerc Psychol 2010;33(suppl):pS42.
23. **Cignetti F**, Kyvelidou A, Harbourne RT, Stergiou N. Coordination and nonlinear dynamics in the development of infant sitting postural control. NASPSPA Conference (North American Society for the Psychology of Sport & Physical Activity), Arizona, USA. J Sport Exerc Psychol 2010;32 (suppl):pS6.
24. **Cignetti F**, Schena F, Rouard A. Effects of fatigue on movement stability in cross-country skiing. XIII International Congress of the ACAPS (Researchers in Physical and Sporting Activities Association), 2009, Lyon, France.

25. **Cignetti F**, Schena F, Mottet D, Rouard A. Effects of fatigue constraint on the dynamics of leg movements in cross-country skiing. Progress in Motor Control VII (International Society for Motor Control), 2009, Marseille, France.
26. **Cignetti F**, Schena F, Rouard A. Dynamical principles of coordination in cross-country skiing. 2nd International Congress Mountain and Sport, 2008, Rovereto, Italy.

CONFÉRENCES SCIENTIFIQUES

- Mai 2023 Symposium "New insights about body representation across typical and atypical development"; "Body representation and internal model of action in children with and without learning disorders". NeuroFrance 2023, Lyon.
- Mars 2023 "Apprendre le corps". Conférence grand public semaine du cerveau 2023, Grenoble
- Mai 2018 "Brain correlates of predictive motor control: typical and atypical developmental features". 11th Day of MRI center, Marseille
- Dec 2016 "Anticipatory motor control develops through changes in connectivity between higher-order cognitive, somatosensory and cerebellar networks". Journée Scientifique Fédération de Recherche 3C, Marseille
- Mai 2014 "Imaging muscle tendon vibration to reveal the neural basis of motor awareness". 7th day of MRI Centre, Marseille
- Nov 2014 "Development of proprioceptive brain network". Workshop 'Sens de la proprioception', Marseille.

SÉMINAIRES

- Nov 2022 "Brain Mechanisms for Motor Prediction". GIPSA-Lab (UMR 5216), Grenoble.
- Juil 2016 "Refinement of internal models of action from infancy to adulthood: behavioral evidences and neural correlates". COMETE (UMR-S 1075), Caen.
- Dec 2014 "The Development of human proprioceptive brain network". Laboratoire de Neurosciences Cognitives (UMR 7291), Marseille.

Récapitulatif des principaux enseignements – période 2017-2024

Licence STAPS UGA

• Licence 1^{ère} année			
- UE Neurosciences	2017-2021	270 hrs eqTD	
• Licence 2^{ème} année			
- UE Ontogenèse : de l'enfant à l'âge adulte <i>responsable de l'UE</i>	2017-maintenant	420 hrs eqTD	
- UE Ontogenèse : de l'âge adulte à l'âge senior <i>responsable de l'UE</i>	2022-maintenant	80 hrs eqTD	
- UE Technologies sportives : ski alpin	2021-maintenant	100 hrs eqTD	
• Licence 3^{ème} année			
- UE Déterminants scientifiques de la performance	2022-2023	40 hrs eqTD	
		910 hrs eqTD	

Licence STAPS SHIFT UGA

- Neurosciences 2, UE Intégration Sensorielle <i>responsable de l'UE</i>	2019-maintenant	80 hrs eqTD	
- Neurosciences 3, UE Apprentissage Moteur <i>responsable de l'UE</i>	2019-maintenant	80 hrs eqTD	
		160 hrs eqTD	

Master STAPS UGA

• Master 1^{ère} année			
- UE Contrôle de la motricité <i>responsable de l'UE</i>	2019-maintenant	190 hrs eqTD	
- UE Initiation à la recherche	2020-maintenant	80 hrs eqTD	
- UE Stage M1 (mention EOPS) <i>responsable de l'UE</i>	2019-maintenant	100 hrs eqTD	
- Encadrement mémoire	2018-maintenant	70 hrs eqTD	
		440 hrs eqTD	
		1510 hrs eqTD	