

van Niel Guillaume

CURRICULUM VITAE

PERSONAL INFORMATION

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URL for web site:

<https://cpn.paris5.inserm.fr/recherche/equipes-et-projets/17-equipe-van-niel>

“DIRECTEUR DE RECHERCHE 2EME CLASSE”,
RESEARCH DIRECTOR

Date of birth: 21/01/1976

Nationality: French

POSITIONS

2017 **Research director CNRS**

2017- **Team leader, Centre de Psychiatrie et Neurosciences, UMR_S894 INSERM**

“*Endosomal dynamic in neuropathies.*”

2008-2016 **Permanent researcher CNRS/ Project leader**, G. Raposo laboratory, Institut Curie, UMR144/CNRS « *Endosomal mechanisms involved in amyloidogenesis and exosome biogenesis.* »

2005-2008 **Post-Doctoral fellow**, Institut Curie, G. Raposo laboratory. (NIH contract) « *Endosomal sorting machineries in lysosomes related organelles biogenesis and exosome secretion.* »

2003-2005 **Post-Doctoral fellow**, Utrecht University, Netherlands, W. Stoorvogel laboratory. (European Marie Curie Fellowship) « *Endosomal trafficking of MHCII molecules in murine dendritic cells.* »

1998-2003 **Master, PhD**, Paris, Hopital Necker – Enfants Malades, INSERM E9925 N. Cerf-Bensussan laboratory (research minister grant, FRM) « *Characterization of intestinal epithelial cells derived exosomes.* »

EDUCATION & RECENT TRAINING

INSTITUTION AND LOCATION	DEGREE	YEAR(S)	FIELD OF STUDY
Université de Paris (5), France	H.D.R.	2014	Cell Biology
Université de Paris (7), France	PhD	2003	Physiology

2015 Correlative light electron microscopy

2015 Project Designer and Manager on aquatic models (CNRS)

2016 Livestock, behavior and transgenesis of fish models zebra and medaka (CNRS)

EXPERTISES

Scientific expertise: Exosomes biogenesis and functions, endosomal dynamic and sorting, endosomal amyloidogenesis, intracellular trafficking, amyloidogenic proteases.

Technical expertise: Electron microscopy (resin, immunolabeling, CLEM), cell biology methods, biochemistry, zebrafish, in vivo imaging.

PROJECT MANAGEMENT

Principal investigator of projects in my present laboratory:

« Visualization of exosome secretion in vivo. » (1 Post Doc, 1 master, 1 technician)

« Endosomal mechanisms associated to amyloid metabolism. » (1 Post Doc)

« Biogenesis and functions of exosomes associated to ApoE. » (1 Ph.D student, 1 post-doc)

MAJOR COLLABORATIONS FOR THE PROPOSED PROJECT.

.Dr. G Raposo, *Electron microscopy*, PICT IBISACurie Institute, Paris France

.Dr M Pegtel, Visualization of exosome secretion, VUMC Amsterdam, Pays bas

.Dr F Del Bene, *Zebrafish strain development*, Curie Institute, Paris France

.Dr Claire wyart, *Zebrafish strain development*, ICM, Paris France

.Dr J Goetz, Live imaging in *Zebrafish*, Strasbourg, France

.Dr. L. Weisman, Dr M Meisler, *Phospholipids in endosomal dynamics*. U MI, USA

.Pr W Annaert and B de Strooper, *secretases in endosomal dynamics*. VIB Louvain, Belgium

MANAGEMENT

Ph D Students

- 2015-2018: Roberta Palmulli: « Biogenesis and functions of exosomes associated to ApoE. »
- 2010-2014 Leila Rochin: « Role of beta and gamma secretases in functional amyloidogenesis. »
- 2007-2011 Sabrina Simoes: « Role of ESCRT machinery during melanogenesis. »

Post doctorat

- 2011-2013 Alessandra Lo Cicero: « Role of exosomes within the epidermal melanin unit. »
- 2013-2018 Christin Bissig: « Endosomal mechanisms associated to physiological amyloidogenesis. »
- 2014-2019 Frederic Verweij: « Visualization of exosome dynamics in vivo. »
- 2017-2019 Pauline Croisé: « Regulation of endosomal membrane contact sites. »
- 2019-2021 Charlotte Volgers “Role of ApoE isoforms in the endosomal balance between degradation and secretion”

Technicians

- 2010-2011 Cecile Fort: « Characterization of exosomes by Cryo-EM. »
- 2013-2016 Ptissam Bergam: « Regulation of endosomes homeostasis by ABC transporters. »

Master and Post-master students

- 2009-2010 Leila Rochin: « Role of beta and gamma secretases in functional amyloidogenesis. »
- 2014 Roberta Palmulli: “Biogenesis and functions of exosomes associated to ApoE in melanoma.”
- 2019 Ismahan Abdirizak “inducible membrane contact sites”

INSTITUTIONAL RESPONSABILITIES

- Co-founder** of the French society of Extracellular Vesicles
- Co-founder** and manager of the French society of Extracellular Vesicles website
- French representative for** European cooperation in science and technics, **COST** European Network on Microvesicles and Exosomes in Health and Disease.
- Member** of International Society for Extracellular Vesicles,
of the French society of electronic microscopy,
de la société de biologie cellulaire de France,
of the comity of external users of BioImaging Cell and Tissue Core Facility of the Institut Curie, Paris, France.
Of the club exo-endo board.

Organization of International Symposiums and Courses

- Co-Organiser of CNRS Workshop**, “A la conquete des nanovesicules biologiques”.
- Co-Organiser of EMBL advanced course**, “Extracellular Vesicles: from Biology to Biomedical Applications”.
- Organiser of satellite symposium at NeuroFrance 2017 Bordeaux** : “Intracellular trafficking in Neurons”
- Member of the organizing committee** of FSEV 2017 and 2019 meeting, ISEV 2016 (International Society on extracellular vesicles) meeting (900 participants), Rotterdam and ISEV 2011 meeting, Paris, France.
- Organizer** of weekly seminars of Units UMR144/U932/U1143-UMR3666 between 2013 and 2016
- Chairman** in several congresses (ISEV, Exocytosis-Endocytosis) since 2010

Referee activity

- Referee on thesis and HDR committees** in France and Belgium since 2014
- Evaluator** for Fonds Wetenschappelijk Onderzoek (FWO) - Vlaanderen, and for CIFRE.
- Member of the editorial board of Matters.**
- Reviewer** for Nature Cell biology, Current biology, The Journal of Cell Biology, Journal of Cell Science, Biology of the Cell, Traffic, J Biochem, J Proteomic, Cellular and Molecular Life Sciences...

TEACHING ACTIVITIES

- 1999-2002 Licence** University Paris 7, “bio-statistics and bio-informatic”.
- 2009-2013 Master** PARIS V ‘Ge2id’ doctoral school, "Exosomes and Lysosomes".

2012- Master Curie-Monod Institutes "Exosomes and Lysosomes".
2016 Educational day at ISEV 2016
2016 "5th South American Summer School in Cell Biology"
2018 **Cajal school**, advanced imaging methods in neuroscience, Bordeaux
2014- 2019 EMBL advanced course Extracellular Vesicles: from Biology to Biomedical Applications

AWARDS AND PERSONAL FELLOWSHIPS

FRM "Amorçage jeunes équipes" 2016
Prime de recherché scientifique 2013
Post-doctoral fellowship from the NIH (FP5), 2005-2008
Post-doctoral fellowship from the **Marie Curie fellowship** program (FP5), 2003-2005
Ph.D fellowship from the Fondation pour la Recherche Médicale 2003
Ph.D fellowship from the French ministry of science 1999-2002
Featured abstract ISEV 2018
Featured abstract ISEV 2017
Best poster price at EMBO Conference EMBO Series: "Dynamic Endosomes". 2011

PREVIOUS AND CURRENT FUNDING AS PI

2019-2020: NIH subcontract "regulation of endosomal dynamic by ApoE isoforms"(65k\$)
2019-2020: France Alzheimer "Endosomal dynamic in A-beta metabolism" (50k€)
2018: DIM-ELICIT region Ile de France (150 000€)
2016-2018: Medical research foundation (FRM) "Amorçage jeunes équipes" (300.000€)
2017-2019: ARC post-doctoral grants "Visualization of exosome dynamics in vivo. "
2015-2016: EMBO post-doctoral grants "Visualization of exosome dynamics in vivo. "
2015-2018: National swiss foundation post-doctoral grants "Endosomal mechanisms associated to physiological amyloidogenesis."
2014-2015: ARC subvention fixe « regulation of pigmentation and melanoma resistance to chemotherapy » (75000€).
2014: Labex CelTisPhyBio post-doctoral grants "Visualization of exosome dynamics in vivo. "
2013-2014: Amyloidosis Foundation (50.000€)
2013-2014: FEBS post-doctoral grants "minimal in vitro model of amyloidogenesis" (32.000 €)
2013-2014: ARC Ph.D fellowship (30.000€)
2013: Labex CelTisPhyBio post-doctoral grants "minimal in vitro model of amyloidogenesis"
2012: Labex CelTisPhyBio grants "minimal in vitro model of amyloidogenesis" (20.000€)
2010-2011 Medical research foundation (FRM) grant for engineer contract (55.000€)
2009: French cancer research association (ARC) grant for equipment and supplies (50.000€)

COMMUNICATIONS IN THE 5 LAST YEARS.

Invited Seminars, plenary lectures

2018 Lecture at Erasmus Center, Rotterdam.
2018 Lecture at Institut Curie, Paris.
2018 Seminar at Hopital Pitié-Salpêtrière, Paris.
2017 Keynote speaker of the Dutch EV society inaugural congress.
2017 Seminar at Unité de neurobiologie Université Aix Marseille
2017 Seminar at Laboratoire Matière et Systèmes Complexes Université Paris 7
2017 Seminar at CRBM Montpellier
2017 Seminar at Interdisciplinary Institute for Neuroscience Université Bordeaux
2017 Plenary Lecture at CNRS Workshop "à la conquête des nanovesicules biologiques »
2017 Plenary Lecture at first FSEV meeting
2016 ISEV 2016, "meet the experts" sessions.
2015 Plenary lectures UK-Extracellular vesicle Forum, Cardiff, UK
2015 Plenary lectures COST ME-HAD meeting, Porto 2015
2015 Seminar at Institut de Chimie, Université de Liège, Belgium
2014 Seminar at CEA-Saclay, France
2013 Seminar at Brain and Spine Institute, Paris, France

Presentations in International Conferences

2018 Cold Spring Harbor Asia: Extracellular Vesicles	Invited speaker
2018 International society of extracellular vesicles	Selected speaker
2018 GSEV/IGLD meeting, Germany	Invited speaker
2018 Gordon conference « lysosomes »	Poster
2018 21eme congrès du club exocytose endocytose (France)	Selected speaker
2017 UK Select-bio Exosomes	Invited speaker
2017 8th Annual meeting of the EFOR Network	Invited speaker
2017 2nd FBI CLEM Symposium Programme	Selected speaker
2016 Keystone symposium “Exosomes/Microvesicles”	Selected speaker
2016 18eme congrès du club exocytose endocytose (France)	Poster
2015 Alzheimer Disease/Parkinson Disease, Nice, France	Selected speaker
2015 International society of extracellular vesicles, 2015, Washington USA	Selected speaker
2015 17eme congrès du club exocytose endocytose (France)	Selected speaker
2014 Building the cell, Paris, France	Poster
2014 International society of extracellular vesicles, 2014, Rotterdam, NL.	Selected speaker
2014 Neurosciences. Minisymposium « Exosomes in the Nervous System. »	Invited speaker
2014 16eme congrès du club exocytose endocytose (France)	Selected speaker
2013 Alzheimer Disease/Parkinson Disease, Firenze, Italy	Poster
2013 Meeting on BACE proteases. Kloster Seeon, Germany.	invited speaker
2013 European symposium on pigment cell research, Lisboa, Portugal.	invited speaker
2013 15eme congrès du club exocytose endocytose (France)	Selected speaker
2013 International society of extracellular vesicles, 2013, Boston USA.	Selected speaker

Full publication list:

Total number of publications in peer-reviewed journals: 37 ; H factor : 25, total citations without self-citations: 3174.

Main Publications list :

In revision:

. Verweij FJ, Revenu C, Arras G, Dingli F, Damarys L, Follain G, Allio G, Goetz J, Herbomel P, Del Bene F, Raposo G, **van Niel G**. Live tracking of inter-organ communication by endogenous exosomes in vivo. bioRxiv 380311; doi: <https://doi.org/10.1101/380311> (**Dev. Cell** final revision)

. Bissig C, Hurbain I, Lenk G, Kaufman E, Meisler M, Weisman L, Raposo G, **van Niel G**. PI(3,5)P2 regulates melanosome biogenesis through control of lysosomal kiss-and-run. (**JCB**, in revision)

. Hyenne V, Ghoroghi S, Collot M, Harlepp S, Bauer J, Mercier L, Busnelli I, Lefebvre O, Fekonja N, Machado P, Bons J, Delalande F, Amor AI, Garcia Silva S, Verweij FJ, **van Niel G**, Schwab Y, Peinado H, Carapito C, Klymchenko AS, Goetz J. Studying the fate of tumor extracellular vesicles at high spatio-temporal resolution using the zebrafish embryo. bioRxiv 380238; doi: <https://doi.org/10.1101/380238>. (**Dev. Cell** final revision)

Published:

. Cesi G, Philippidou D, Kozar I, Kim YJ, Bernardin F, **van Niel G**, Wienecke-Baldacchino A, Felten P, Letellier E, Dengler S, Nashan D, Haan C, Kreis S. A new ALK isoform transported by extracellular vesicles confers drug resistance to melanoma cells. **Mol Cancer**. 2018 Oct 5;17(1):145. doi: 10.1186/s12943-018-0886-x. PubMed PMID: 30290811.

- . Nag S, Rani S, Mahanty S, Bissig C, Arora P, Azevedo C, Saiardi A, van der Sluijs P, Delevoeye C, **van Niel G**, Raposo G, Setty SRG. Rab4A organizes endosomal domains for sorting cargo to lysosome-related organelles. **J Cell Sci.** 2018 Sep 20;131(18). pii: jcs216226. doi: 10.1242/jcs.216226. PubMed PMID: 30154210; PubMed Central PMCID: PMC6151265.
- . Bergam P, Reisecker JM, Rakvács Z, Kucsma N, Raposo G, Szakacs G, **van Niel G**. ABCB6 Resides in Melanosomes and Regulates Early Steps of Melanogenesis Required for PMEL Amyloid Matrix Formation. **J Mol Biol.** 2018 Oct 12;430(20):3802-3818. doi: 10.1016/j.jmb.2018.06.033. Epub 2018 Jun 22. PubMed PMID: 29940187.
- . Palmulli R, **van Niel G**. To be or not to be... secreted as exosomes, a balance finely tuned by the mechanisms of biogenesis. *Essays Biochem.* 2018 May 15;62(2):177-191. doi: 10.1042/EBC20170076. Print 2018 May 15. Review. PubMed PMID: 29717057.
- . **van Niel G**, D'Angelo G, Raposo G. Shedding light on the cell biology of extracellular vesicles. **Nat Rev Mol Cell Biol.** 2018 Jan 17. doi: 10.1038/nrm.2017.125. [Epub ahead of print] Review. PubMed PMID: 29339798.
- . Verweij FJ, Bebelman MP, Jimenez CR, Garcia-Vallejo JJ, Janssen H, Neeffjes J, Knol JC, de Goeij-de Haas R, Piersma SR, Baglio SR, Verhage M, Middeldorp JM, Zomer A, van Rheenen J, Coppolino MG, Hurbain I, Raposo G, Smit MJ, Toonen RFG, **van Niel G***, Pegtel DM*. Quantifying exosome secretion from single cells reveals a modulatory role for GPCR signaling. **J Cell Biol.** 2018 Jan 16. pii: jcb.201703206. doi: 10.1083/jcb.201703206. [Epub ahead of print] PubMed PMID: 29339438. (* co-last-author)
- . Bissig C, Hurbain I, Raposo G, **van Niel G**. PIKfyve activity regulates reformation of terminal storage lysosomes from endolysosomes. **Traffic.** 2017 Aug 31. PMID: 28857423
- . Elkhatib N, Bresteau E, Baschieri F, Rioja AL, **van Niel G**, Vassilopoulos S, Montagnac G. Tubular clathrin/AP-2 lattices pinch collagen fibers to support 3D cell migration. **Science.** 2017 Jun 16;356(6343). pii: eaal4713. doi: 10.1126/science.aal4713. PubMed PMID: 28619886.
- . Barbazán J, Alonso-Alconada L, Elkhatib N, Geraldo S, Gurchenkov V, Glentis A, van Niel G, Palmulli R, Fernández B, Viaño P, Garcia-Caballero T, López-López R, Abal M, Vignjevic DM. Liver Metastasis Is Facilitated by the Adherence of Circulating Tumor Cells to Vascular Fibronectin Deposits. **Cancer Res.** 2017 May 23. doi: 10.1158/0008-5472.CAN-16-1917. [Epub ahead of print] PubMed PMID: 28536280.
- . Van Deun J, et al.. EV-TRACK: transparent reporting and centralizing knowledge in extracellular vesicle research. **Nat Methods.** 2017 Feb 28;14(3):228-232. doi: 10.1038/nmeth.4185. PubMed PMID: 28245209.
- . Bissig C, Rochin L and **van Niel G**. PMEL Amyloid Fibril Formation: The Bright Steps of Pigmentation. **Int J Mol Sci.** 2016 Aug 31;17(9). pii: E1438. doi: 10.3390/ijms17091438. Review. PubMed PMID: 27589732.
- . Sannerud R, Esselens C, Ejsmont P, Mattera R, Rochin L, Tharkeshwar AK, De Baets G, De Wever V, Habets R, Baert V, Vermeire W, Michiels C, Groot AJ, Wouters R, Dillen K, Vints K, Baatsen P, Munck S, Derua R, Waelkens E, Basi GS, Mercken M, Vooijs M, Bollen M, Schymkowitz J, Rousseau F, Bonifacino JS, **van Niel G**, De Strooper B, Annaert W. Restricted Location of PSEN2/γ-Secretase Determines Substrate Specificity and Generates an Intracellular Aβ Pool. **Cell.** 2016 Jun 30;166(1):193-208. doi: 10.1016/j.cell.2016.05.020. Epub 2016 Jun 9. PubMed PMID: 27293189.
- . **van Niel G**. Study of Exosomes Shed New Light on Physiology of Amyloidogenesis. **Cell Mol Neurobiol.** 2016 Apr;36(3):327-42. doi: 10.1007/s10571-016-0357-0. Epub 2016 Mar 17. PubMed PMID: 26983829.
- . Fais S, O'Driscoll L, Borrás FE, Buzas E, Camussi G, Cappello F, Carvalho J, Cordeiro da Silva A, Del Portillo H, El Andaloussi S, Ficko Trček T, Furlan R, Hendrix A, Gursel I, Kralj-Iglic V, Kaeffer B, Kosanovic M, Lekka ME, Lipps G, Logozzi M, Marcilla A, Sammar M, Llorente A, Nazarenko I, Oliveira C, Pocsfalvi G, Rajendran L, Raposo G, Rohde E, Siljander P, **van Niel G**, Vasconcelos MH, Yáñez-Mó M, Yliperttula ML, Zarovni N, Zavec AB, Giebel B. Evidence-Based Clinical Use of Nanoscale Extracellular Vesicles in Nanomedicine. **ACS Nano.** 2016 Apr 26;10(4):3886-99. doi: 10.1021/acsnano.5b08015. Epub 2016 Mar 15. PubMed PMID: 26978483.

. **van Niel G**, Di Cicco A, Hurbain I, Bergam P, Lo Cicero A, Dingli F, Palmulli R, Fort C, Potier MC, Loew D, Schurgers L, Raposo G and Levy D. Amyloid formation is regulated by Apolipoprotein E in endosomes. **Cell Rep.** Oct 2015 PMID: 26387950. Corresponding author

. Cicero AL, Delevoye C, Gilles-Marsens F, Loew D, Dingli F, Guéré C, André N, Vié K, **van Niel G**, Raposo G. Exosomes released by keratinocytes modulate melanocyte pigmentation. **Nat Commun.** 2015 Jun 24;6:7506. doi: 10.1038/ncomms8506. PubMed PMID: 26103923; PubMed Central PMCID: PMC4491833.

. Rajendran L, Bali J, Barr MM, Court FA, Krämer-Albers EM, Picou F, Raposo G, van der Vos KE, **van Niel G**, Wang J, Breakefield XO. Emerging roles of extracellular vesicles in the nervous system. **J Neurosci.** 2014 Nov 12;34(46):15482-9. doi: 10.1523/JNEUROSCI.3258-14.2014. Review. PubMed PMID: 25392515; PubMed Central PMCID: PMC4228143.

. Rochin L, Hurbain I, Serneels L, Fort C, Watt B, Leblanc P, Marks MS, De Strooper B, Raposo G, **van Niel G**. BACE2 processes PMEL to form the melanosome amyloid matrix in pigment cells. **Proc Natl Acad Sci U S A.** 2013 Jun 25;110(26):10658-63. doi: 10.1073/pnas.1220748110. Epub 2013 Jun 10. PubMed PMID: 23754390; PubMed Central PMCID: PMC3696817.

. Watt B, **van Niel G**, Raposo G, Marks MS. PMEL: a pigment cell-specific model for functional amyloid formation. **Pigment Cell Melanoma Res.** 2013 May;26(3):300-15. doi: 10.1111/pcmr.12067. Epub 2013 Feb 19. Review. PubMed PMID: 23350640; PubMed Central PMCID: PMC3633693.

. **van Niel G**, Charrin S, Simoes S, Romao M, Rochin L, Saftig P, Marks MS, Rubinstein E, Raposo G. The tetraspanin CD63 regulates ESCRT-independent and -dependent endosomal sorting during melanogenesis. **Dev Cell.** 2011 Oct 18;21(4):708-21. doi: 10.1016/j.devcel.2011.08.019. Epub 2011 Sep 29. PubMed PMID: 21962903; PubMed Central PMCID: PMC3199340.

. Watt B, **van Niel G**, Fowler DM, Hurbain I, Luk KC, Stayrook SE, Lemmon MA, Raposo G, Shorter J, Kelly JW, Marks MS. N-terminal domains elicit formation of functional Pmel17 amyloid fibrils. **J Biol Chem.** 2009 Dec 18;284(51):35543-55. doi: 10.1074/jbc.M109.047449. Epub . PubMed PMID: 19840945; PubMed Central PMCID: PMC2790984.

. **van Niel G**, Wubbolts R, Stoorvogel W. Endosomal sorting of MHC class II determines antigen presentation by dendritic cells. **Curr Opin Cell Biol.** 2008 Aug;20(4):437-44. doi: 10.1016/j.ceb.2008.05.011. Epub 2008 Jul 5. Review. PubMed PMID: 18582577.

. Mallegol J* and **van Niel G***, Lebreton C, Lepelletier Y, Candalh C, Dugave C, Heath JK, Raposo G, Cerf-Bensussan N, Heyman M. T84-intestinal epithelial exosomes bear MHC class II/peptide complexes potentiating antigen presentation by dendritic cells. **Gastroenterology.** 2007 May;132(5):1866-76. Epub 2007 Feb 22. PubMed PMID: 17484880. (*co-first authors)

. **van Niel G**, Wubbolts R, Ten Broeke T, Buschow SI, Ossendorp FA, Melief CJ, Raposo G, van Balkom BW, Stoorvogel W. Dendritic cells regulate exposure of MHC class II at their plasma membrane by oligoubiquitination. **Immunity.** 2006 Dec; PubMed PMID: 17174123.

. **van Niel G**, Porto-Carreiro I, Simoes S, Raposo G. Exosomes: a common pathway for a specialized function. **J Biochem.** 2006 Jul;140(1):13-21. Review. PubMed PMID: 16877764.

. **van Niel G**, Mallegol J, Bevilacqua C, Candalh C, Brugière S, Tomaskovic-Crook E, Heath JK, Cerf-Bensussan N, Heyman M. Intestinal epithelial exosomes carry MHC class II/peptides able to inform the immune system in mice. **Gut.** 2003 Dec;52(12):1690-7. PubMed PMID: 14633944; PubMed Central PMCID: PMC1773888.

. **van Niel G**, Raposo G, Candalh C, Boussac M, Hershberg R, Cerf-Bensussan N, Heyman M. Intestinal epithelial cells secrete exosome-like vesicles. **Gastroenterology.** 2001 Aug;121(2):337-49. PubMed PMID: 11487543.
