

Yonatan GANOR

Collège A1

Section 29

Curriculum Vitae

Civil status

Name: GANOR, First name: Yonatan; Place and date of birth: Paris, France, 27/08/1974

Research Positions

2025-present Cochin Institute, Paris, France - Co-director (together with Dr Molly Ingersol) of the Immunology Axis; Co-director (together with Dr Morgane Bomsel) of the laboratory of 'Mucosal Entry, Persistence and Neuro-Immune Control of HIV-1 and other viruses'

2013-present Research Director DR2 (from 2022) / Senior Research Associate CR1/CRCN (2013-2022) at CNRS, the laboratory of 'Mucosal Entry of HIV-1 and Mucosal Immunity', Department of Infection, Immunity and Inflammation, Cochin Institute, Paris, France. Group leader (from 2017), investigating the mechanisms of neuro-immune control of mucosal viral infections.

2006-2013 Postdoctoral fellow, the laboratory of 'Mucosal Entry of HIV-1 and Mucosal Immunity', Department of Cell Biology and Host-Pathogen Interactions, Cochin Institute, Paris, France. Project aimed at investigating the mechanisms of HIV-1 transmission and reservoir establishment in the male genital tract, under the supervision of Dr Morgane Bomsel.

Academic qualifications

2014 HDR (Habilitation à Diriger des Recherches) degree, Life Sciences, Paris 7 University, Paris, France

2006 PhD degree, Neuroimmunology, Feinberg Graduate School of the Weizmann Institute of Science, Rehovot, Israel

2001 MSc degree, Neuroimmunology, Feinberg Graduate School of the Weizmann Institute of Science, Rehovot, Israel

1996 BSc degree, Food Engineering and Biotechnology, Technion, Israel Institute of Technology, Haifa, Israel

Professional distinctions

2010-2013 ANRS post-doctoral fellowship; **2008-2010** SIDACTION post-doctoral fellowship; **2006-2008** EMBO long-term fellowship

Funding awarded

2025-2027 PI, ANRS 66k€; **2024-2026 PI**, ANRS 59k€; **2023-2024 PI**, ISIDORE 87k€; **2021-2024 PI**, ANRS 90k€; **2021 PI**, Cochin Institute 'Proof of Concept (POC)' 15k€; **2020-2022 PI**, SIDACTION 51k€; **2018-2020 PI**, SIDACTION 58k€; **2014-2016 Co-PI**, La SATT IDFinnov maturation project n°005, 30k€.

Meetings organization, membership and chairing

2025 Co-organizer - The 18th International Workshop on Langerhans Cells (Saint Louis, MO, USA); **2024 Lead Rapporteur, Basic Science Track** - The 5th HIV Research for Prevention (HIVR4P) Conference (Lima, Peru); **2023 Chair/Organizer** - The 17th International Workshop on Langerhans Cells (Paris, France); **2020 Co-chairing** - ANRS AC41 Work In Progress (WIP) meeting, Session 2 "HIV replication, escape and treatment"; **2019 Nominated member** - International Advisory/Scientific Committee of the Langerhans cells Workshops (Mainz/Bodenheim); **2014 Co-organizer** - The 5th Cochin Institute Symposium on neglected HIV-1 reservoirs (Paris, France).

Invited talks in international and national meetings

2024 Plenary Invited Speaker - The 52nd Annual Scientific Meeting of Australian and New Zealand Society for Immunology (ASI; Sydney, Australia) and the 12th Australian Virology Society Meeting (AVS; Creswick, Australia): "Novel mucosal anti-viral neuroimmune approaches"; **2024** The 3rd France-Japan Symposium on HIV/AIDS and infectious diseases basic research (ANRS, Paris, France): "Mucosal viruses: from pathophysiology of transmission to neuro-immune prevention"; **2023** Annual symposium of the Microb'Up Institute (Paris, France): "Neuro-immune (epithelial) control of mucosal viral infections"; **2019** The 1st France-Japan Symposium on HIV (ANRS, Paris, France): "Neuro-immune control of mucosal viral infections"; **2019** The 10th IAS Conference on HIV Science (Mexico City, Mexico): "HIV-1 persistence in macrophages". **2018** International Investigative Dermatology meeting (Orlando, FL, USA): "Calcitonin gene-related peptide inhibits Langerhans cell-mediated HIV-1 transmission"; **2016** Grand Rounds, Department of Dermatology, New York Presbyterian Hospital-Weill Cornell Medicine (New York, NY, USA): "Old dog, new tricks: calcitonin gene-related peptide inhibits Langerhans cell-mediated mucosal HIV-1 transmission"; **2015** The 17th French Days of Virology meeting (Paris, France): "HIV-1 transmission and reservoirs in the male genital tract"; The 5th Cochin Institute Symposium on neglected HIV-1 reservoirs (Paris, France, Nov 2014): "HIV-1 reservoirs in the adult male penis"; **2014** The 2nd Nerve-Driven Immunity meeting (Stockholm, Sweden): "Calcitonin gene-related peptide (CGRP): a neuro-immuno transmitter in health and disease".

Mentoring

2009, 2011, 2013, 2014, 2024, 2025 - M2 students: 5; **2017-2021, 2021-2024, 2022-2025** - PhD students: 3; **2015-2016, 2021-2023** - Postdoctoral fellows: 2

Reviewing

2024, 2025 - Grant proposals: 2 (German Research Foundation, DFG); **2014-2023** - Scientific manuscripts in peer-reviewed journals: 13 (e.g. JCI, Front Immunol, Mucosal Immunol, Sci Rep, Front Immunol); **2022-2024** - Jury of PhD thesis: 4 (national/international)

Teaching

2022 Master of Physiopathology and Immune Responses (Université de Paris and Université Paris Sorbonne), Module 3: Mucosal Immunity: "Neuro-immune control of mucosal viral infections"; **2010** EMBO World Lecture Course, Virus-host: partners in pathogenicity (San Jose, Costa Rica): "Early events in HIV entry into human genital mucosa".

Technology transfer

2021-2022, 2016-2018 Academy-industry collaborations (contrat de collaboration de recherche, Refs CNRS LSP241331 / n°155558) with Synsight (<http://www.synsight.net>), a company specialized in computer aided molecule design; project aiming at *in-silico* molecular modeling development and optimization of novel CGRP receptor agonists; **2014 Patent** - "CGRP receptor agonist for HIV treatment or prevention", WO2014154891, PCT/EP2014/056356, INSERM / CNRS / Paris Descartes, Inventors: 50%/50%, Bomsel M, **Yonatan GANOR**.

Animation

2023-2025 Co-animation of the 'Club VIH/Viro' at the Cochin Institute, Paris, France (twice yearly)

Media and vulgarisation:

2024 INSB CNRS Actualité scientifique: « Le neuropeptide CGRP : un nouvel acteur dans la lutte contre la Covid-19 » ; **2023 Radio France / France culture** Podcast: « La capsaïcine, la molécule piquante du piment, a une activité antivirale contre le VIH » ; **2023 INSB CNRS** Actualité scientifique: « Prévention « piquante » de l'infection par le VIH-1 » ; **2023 SIDACTION** Le magazine Transversal: « Yonatan Ganor : la recherche hors des sentiers battus » ; **2023 Le magazine de l'INSERM (#55, p36-39)** « VIH : cache-cache immunitaire » ; **2022, 2018, 2017 SIDACTION** Journée donateurs ; **2021 SIDACTION** Cannabinoids for prevention of HIV-1 infection ; **2019 École normale supérieure Paris-Saclay** « VIH-1: découvertes de nouveaux types de cellules réservoir » ; **2018 Université Paris Descartes** Journée mondiale de lutte contre le sida ; **2014 France 5** Allô docteurs ; **2013 Les Cahiers de l'Université Paris Descartes** ; **2012** Ganor Y, Bomsel M, « Le prépuce, porte d'entrée du virus du sida », La Recherche, 2012,461:56 ; **2008 SIDACTION** Transversal, magazine d'information sur le sida soutenu par Sidaction, « circoncision: cercle vicieux ou vertueux? ».

Selected publications (*corresponding author)

Total number of peer reviewed publications: 40 Journal articles, 2 book chapters

Neuro-immune control of mucosal viruses

- 1) Barbosa Bomfim CC, Génin H, Mariotton J, Matias I, Cota D, Barry Delongchamps N, Zerbib M, Bomsel M, **Ganor Y***. Cannabidiol prevents mucosal HIV-1 transmission by targeting Langerhans cells, macrophages and T-cells. *In Preparation*. 2025.
- 2) Barbosa Bomfim CC, Genin H, Cottoignies-Callamarte A, Gallois-Montbrun S, Murigneux E, Sams A, Rosenberg AR, Belouzard S, Dubuisson J, Kosminder O, Pène F, Terrier B, Bomsel M, **Ganor Y***. CGRP inhibits SARS-CoV-2 infection of bronchial epithelial cells and its pulmonary levels correlate with viral clearance in critical COVID-19 patients. *J Virol*. 2024. e0012824.
- 3) Mariotton J, Cohen E, Zhu A, Auffray C, Barbosa Bomfim CC, Barry Delongchamps N, Zerbib M, Bomsel M, **Ganor Y***. TRPV1 activation in human Langerhans cells and T-cells and inhibits mucosal HIV-1 infection via CGRP-dependent and independent mechanisms. *PNAS*. 2023. 120(22):e2302509120.
- 4) Cohen E, Mariotton J, Rozenberg F, Sams A, van Kuppevelt TH, Barry Delongchamps N, Zerbib M, Bomsel M, **Ganor Y***. CGRP inhibits human Langerhans cells infection with HSV by differentially modulating specific HSV-1 and HSV-2 entry mechanisms. *Mucosal Immunol*. 2022. 15(4):762-771.
- 5) Mariotton J, Sams A, Cohen E, Sennepin A, Siracusano G, Sanvito F, Edvinsson L, Barry Delongchamps N, Zerbib M, Lopalco L, Bomsel M, **Ganor Y***. Native CGRP neuropeptide and its stable analogue SAX, but not CGRP peptide fragments, inhibit mucosal HIV-1 transmission. *Front Immunol*. 2021. 12:785072.
- 6) Bomsel M, Lopalco L, Uberti-Foppa C, Siracusano G, **Ganor Y***. Decreased plasma calcitonin gene-related peptide (CGRP) as a novel biomarker for HIV-1 disease progression. *AIDS Res Hum Retroviruses*. 2019. 35(1):52-55.
- 7) Bomsel M, **Ganor Y***. Calcitonin gene-related peptide induces HIV-1 proteasomal degradation in mucosal Langerhans cells. *J Virol*. 2017. 91(23):e01205-17.
- 8) **Ganor Y***, Drillet-Dangeard AS, Bomsel M. Calcitonin gene-related peptide inhibits human immunodeficiency type 1 transmission by Langerhans cells via an autocrine/paracrine feedback mechanism. *Acta Physiol*. 2015. 213(2):432-41.
- 9) **Ganor Y**, Drillet-Dangeard AS, Lopalco L, Tudor D, Tambussi G, Barry Delongchamps N, Zerbib M, Bomsel M. Calcitonin gene-related peptide inhibits Langerhans cell-mediated HIV-1 transmission. *J Exp Med*. 2013. 210(11):2161-70.

HIV-1 entry and reservoirs

- 10) Real F, **Ganor Y**, Bomsel M. Experimental Models to study HIV latency reversal from male genital myeloid cells. *Methods Mol Biol*. 2022. 2407:189-204.
- 11) **Ganor Y***, Real F, Sennepin A, Dutertre CA, Prevedel L, Xu L, Tudor D, Charmeteanu B, Couedel-Courteille A, Marion S, Zenak AR, Jourdain JP, Zhou Z, Schmitt A, Capron C, Eugenin EA, Cheynier R, Revol M, Cristofari S, Hosmalin A, Bomsel M*. HIV-1 reservoirs in urethral macrophages of patients under suppressive antiretroviral therapy. *Nat Microbiol*. 2019. 4(4):633-44.
- 12) Real F, Sennepin A, **Ganor Y**, Schmitt A, Bomsel M. Live imaging of HIV-1 transfer across T-cell virological synapse to epithelial cells that promotes stromal macrophage infection. *Cell Rep*. 2018. 23(6):1794-805.
- 13) Zhou Z, Xu L, Sennepin A, Federici C, **Ganor Y**, Tudor D, Damotte D, Barry Delongchamps N, Zerbib M, Bomsel M. The HIV-1 viral synapse signals human foreskin keratinocytes to secrete thymic stromal lymphopoietin facilitating HIV-1 foreskin entry. *Mucosal Immunol*. 2018. 11(1):158-71.
- 14) Sennepin A, Real F, Duvivier M, **Ganor Y**, Henry S, Damotte D, Revol M, Cristofari S, Bomsel M. The human penis is a genuine immunological effector site. *Front Immunol*. 2017. 8:1732.
- 15) **Ganor Y**, Zhou Z, Bodo J, Tudor D, Leibowitch J, Mathez D, Schmitt A, Vacher-Lavenu MC, Revol M, Bomsel M. The adult penile urethra is a novel entry site for HIV-1 that preferentially targets resident urethral macrophages. *Mucosal Immunol*. 2013. 6(4):776-86.
- 16) Zhou Z, Barry Delongchamps N, Schmitt A, Zerbib M, Vacher-Lavenu MC, Bomsel M, **Ganor Y**. HIV-1 efficient entry in inner foreskin is mediated by elevated CCL5/RANTES that recruits T cells and fuels conjugate formation with Langerhans cells. *PLoS Pathog*. 2011. 7(6):e1002100.
- 17) Bomsel M, Tudor D, Drillet AS, Alfsen A, **Ganor Y**, Roger MG, Mouz N, Amacker M, Chalifour A, Diomedea L, Devillier G, Cong Z, Wei Q, Gao H, Qin C, Yang GB, Zurbriggen R, Lopalco L, Fleury S. Immunization with HIV-1 gp41 subunit virosomes induces mucosal antibodies protecting nonhuman primates against vaginal SHIV challenges. *Immunity*. 2011. 34(2):269-80.
- 18) **Ganor Y**, Zhou Z, Tudor D, Schmitt A, Vacher-Lavenu MC, Gibault L, Thiounn N, Tomasini J, Wolf JP, Bomsel M. Within 1 h, HIV-1 uses viral synapses to enter efficiently the inner, but not outer, foreskin mucosa and engages Langerhans-T cell conjugates. *Mucosal Immunol*. 2010. 3(5):506-22.
- 19) Bouschbacher M, Bomsel M, Verronèse E, Gofflo S, **Ganor Y**, Dezutter-Dambuyant C, Valladeau J. Early events in HIV transmission through a human vaginal mucosa. *AIDS*. 2008. 22(11):1257-66.