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Sociétés Savantes

Société Française de Diabétologie, EASD, ADA,
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TITRES/DIPLOMES :

- 1998 **Privat-docent (HDR)**, Faculté de Médecine, Université de Genève, CH
(*Jury: J.L. Charpentier, CH; M. Rodbell, NIH/US; P. Rorsman, SE*).
1985 **FMGEMS (US Foreign Medical Graduate Examination in Medical Sciences, licence to work in US hospitals)**
1985 **Approbation zum Arzt (German federal authorisation to practice medicine)**
1984 **3. Staatsexamen der Humanmedizin**, Albrechts-Ludwig Universität Freiburg/RFA;
1984 **Docteur en sciences biomédicales**, Albrecht-Ludwigs Universität Freiburg/RFA

EXPERIENCES PROFESSIONNELLES:

- 2010 - **Professeur Classe Exceptionnelle** (via CNU), **Université de Bordeaux**
Responsable de groupe (1 PR, 1 PU-PH, 2 MCU, 1 IE, 1 TECH, 3 thésard, 2 M2)
2000 - 2010 **Professeur 1^{er} classe, Université de Bordeaux I**, Institut Européen de Chimie et Biologie (IECB); Responsable de groupe
1997 - 2000 **Chef de Clinique Scientifique**, Division de Biochimie Clinique et Diabète Expérimentale, U. Genève, CH ; PI Fonds National Suisse; Co-requérant HFSP.
1990 - 1997 **Maitre-assistant**, Division de Biochimie Clinique et Diabète Expérimentale (Dir. Pr C.B. Wollheim), **Faculté de Médecine, Université de Genève, CH**
1988 - 1990 **Interne**, Dept. Med. Interne, **Hôpital Cantonal Univ. de Genève**, Genève (CH) (Prof. A.Muller).
1985 - 1988 **Postdoctorat, Max-Planck-Institut**, Neurobiologie, Abt. Neuropharmacologie, **Martinsried** (Munich)/RFA (Prof. A. Herz), bourse Max-Planck and DFG (*Purification et caractérisation de protéines de traduction de signal*)
1984 - 1985 **Service militaire (obligatoire)**, Capitaine (Stabsarzt), Corps de Génie, Flensburg/RFA
1983 - 1984 **6^{eme} Année de médecine (année à choix)** Städt. Krankenhaus Karlsruhe (Chirurgie), Hôpital Cantonal Universitaire de Genève, CH (Médecine, Pédiatrie)
1983 **Clinical clerkship, Pennsylvania State University Medical Centre**, Cardiologie, Hershey, Penn./USA
1981 - 1984 **Etudiant en thèse**, Institut für Pharmakologie, **Med. Fakultät, Universität Freiburg/RFA**
1979 **Clinical clerkship, Bella Coola General Hospital**, Bella Coola Indian Reserve, B.C. Canada
1977-1984 **Etudes de médecine**: Université de Würzburg, RFA; Paris V (Cochin); Université de Freiburg (RFA), Université de Genève

DISTINCTIONS

Fondation Universitaire Allemande/Studienstiftung (1977-1984)
(https://fr.wikipedia.org/wiki/Studienstiftung_des_deutschen_Volkes)

Prix Denber Pinard de l'Université de Genève (1996)

PEDR (2001-2005, 2006-2010, 2010-2014, 2015-2019)

PUBLICATIONS

- 57 articles originaux (39 premier ou dernier auteur, WoS h 26, 3133 cit., total IF 311, mean IF 5.8)
- 7 revues, 3 chapitres, 1 brevet.
- Liste complète: http://www.betacell-cellbio.eu/publications/publications_lang.html

FACULTE/COMMISSIONS

- Membre, Conseil Scientifique Université (2003-2007), Conseil Administration (2008-2012)
- Dir. Adj., Ecole Doctorale des Sciences de la Vie et de la Santé (2007-2015)
- Co-directeur, Master Biologie Cellulaire-Physiopathologie (depuis 2003)
- Membre, Comité National CNRS (section Biologie cellulaire et Développement, 2008-2016)
- Membre (élu), Conseil d'Administration de la SFD (depuis 2016)

SUJETS DE RECHERCHE ACTUELS

- Biologie des îlots/cellule β : transduction de signaux, électrophysiologie
- Biotechnologie: biocapteurs hybrides pour la thérapie du diabète
- Mécanismes moléculaires de l'exocytose (sécrétion)

FINANCEMENTS MAJEURS RECENTS

- ANR Multispot (2017-2020, coordinateur)
- ANR ISLET CHIP (2013-2017, participant majeur)
- ANR HY-BIOPACS (2010-2013, coordinateur)

LISTE PUBLICATIONS

Publications Originaux (57)

- S. Saeed, A. Bonnefond, F. Tamanini, M. Mirza, J. Manzoor, Q. Janjua, S. Din, J. Gaitan, A. Milochau, E. Durand, E. Vaillant, A. Haseeb, F. De Graeve, L. Rabearivelo, O. Sand, G. Queniat, R. Boutry, D. Dina A Schott, H. Hina Ayesha, A. Muhammad Ali, W. Waqas I. Khan, T. Butt, T. Rinne, C. Stumpel, A. Abderrahmani, J. Lang, Arslan M, Froguel P, Loss-of-function mutations in ADCY3 cause monogenic severe obesity, *Nat Genet*, (in press).
- D.A. Koutsouras, R. Perrier, A. Villaroel-Marquez, A. Pirog, E. Pedraza, E. Cloutet, S. Renaud, M. Raoux, G.G. Malliaras, J. Lang, Simultaneous monitoring of single cell and of micro-organ activity by PEDOT:PSS covered multi-electrode arrays, *Materials Science and Engineering: C*, (IN PRESS)
- Hastoy, B., P. A. Scotti, A. Milochau, Z. Fezoua-Boubegtiten, J. Rodas, R. Megret, B. Desbat, M. Laguerre, S. Castano, D. Perrais, P. Rorsman, R. Oda and J. Lang (2017). *A Central Small Amino Acid in the VAMP2 Transmembrane Domain Regulates the Fusion Pore in Exocytosis*. Scientific Reports **7**(1): 2835.
- Semplici, F., A. Mondragon, B. Macintyre, K. Madeyski-Bengston, A. Persson-Kry, S. Barr, A. Ramne, A. Marley, J. McGinty, P. French, H. Soedling, R. Yokosuka, J. Gaitan, J. Lang, S. Migrenne-Li, E. Philippe, P.L. Herrera, C. Magnan, G. da Silva Xavier, and G.A. Rutter. *Cell type-specific deletion in mice reveals roles for PAS kinase in insulin and glucagon production*. Diabetologia **2016**, 59:1938-47
- Solomou, A., E. Philippe, P. Chabosseau, S. Migrenne-Li, J. Gaitan, J. Lang, C. Magnan, and G.A. Rutter. *Over-expression of Slc30a8/ZnT8 selectively in the mouse alpha cell impairs glucagon release and responses to hypoglycemia*. Nutr Metab (Lond). **2016**, 13:46.
- Pedraza E, Karajić A, Raoux M, Perrier R, Lebreton F, Arbault S, Gaitan J, Renaud S, Kuhn A, Lang, J (in press). *Guiding pancreatic beta-cells to target electrodes in a whole-cell biosensor for diabetes*. Lab Chip, **2015**, DOI: 10.1039/C5LC00616C.
- Lebreton F, Pirog A, Belouah I, Bosco D, Berney T, Meda P, Bornat Y, Catargi B, Renaud S, Raoux M, Lang J. *Slow potentials encode intercellular coupling and insulin demand in pancreatic beta cells*. Diabetologia **2015**, 58:1291-9
- Raoux, P. Vacher, J. Papin, A. Picard, E. Kostrzewa, A. Devin, J. Gaitan, I. Limon, M. J. Kas, C. Magnan , J. Lang. *Multilevel control of glucose homeostasis by adenylyl cyclase 8*. Diabetologia **2015**, 58:749-757
- Dou, C. Wang, X. Wu, L. Yao, X. Zhang, S. Teng, H. Xu, B. Liu, Q. Wu, Q. Zhang, M. Hu, Y. Wang, L. Wang, Y. Wu, S. Shang, X. Kang, L. Zheng, J. Zhang, Raoux M., Lang J., Q. Li, J. Su, X. Yu, L. Zhou. *Calcium influx activates adenylyl cyclase 8 for sustained insulin secretion in rat pancreatic beta cells*. Diabetologia **2015**, 58:324-333
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- Nguyen, Q.V., Caro, A., Raoux, M., Quotb, A., Floderer, J.B., Bornat, Y., Renaud, S. and Lang, J. (2013). *A novel bioelectronic glucose sensor to process distinct electrical activities of pancreatic beta-cells*. Conf Proc IEEE Eng Med Biol Soc **2013**, 172-175.
- A. Quotb, Bornat Y, Raoux M, Lang J, Renaud S. *NeuroBetaMed: A re-configurable wavelet-based event detection circuit for in vitro biological signals*. *2012 IEEE International Symposium on Circuits and Systems (ISCAS)*, Seoul, Korea (South). **2012**.
- Raoux, M., Bornat, Y., Quotb, A., Catargi, B., Renaud, S. and Lang , J. *Non-invasive long-term and real-time analysis of endocrine cells on micro-electrode arrays*. J. Physiol. **2012**, 590:1085-1092.
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- Bornat, Y.; Raoux, M.; Boudaïb, Y.; Morin, F. O.; Charpentier, G.; Lang, J.; Renaud, S. *Detection of electrical activity of pancreatic β -cells using micro-electrode arrays*. Proceedings 5th IEEE Int. Symposium on Electronic Design, Test & Applications, 2010.
- Yassine, W., Taib, N., Federman, S., Milochau, A., Castano, S., Sbi, W., Manigand, C., Laguerre, M., Desbat, B., Oda, R. and J. Lang, *Reversible transition between α -helix and β -sheet conformation of a transmembrane domain*. Biochem. Biophys. Acta – Biomembranes, **2009**, 1788:1722-1730.
- Karaca, M., Castel, J., Tourrel-Cuzin, C., Brun, M., Geant, A., Dubois, M., Catesson, S., Rodriguez, M., Luquet, S., Cattan, P., Lockhart, B., Lang, J., Ktorza A., Magnan, C. and C. Kargar, *Exploring Functional β -Cell Heterogeneity In Vivo Using PSA-NCAM as a Specific Marker*. PLOS ONE, **2009**, 4: e5555.
- Grise, F., N. Taib, C. Monerrat, V. Lagrée, and J. Lang, *Distinct roles of the C_2A and the C_2B domain of the vesicular Ca^{2+} sensor synaptotagmin 9 in endocrine β -cells*. Biochem. J., **2007**, 403: p. 483-492.
- Monerrat, C., F. Grise, A. Hémar, and J. Lang, *The calcium-sensing protein synaptotagmin 7 is expressed on different endosomal compartments in pancreatic β -cells and in neurons but not on large dense core vesicles*. Histochem. Cell Biol., **2007**, 127: 625-632.
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- Lajus, S., P. Vacher, D. Huber, M. Dubois, M.N. Benassy, Y. Ushkaryov, and J. Lang, *Alpha-latrotoxin induces exocytosis by inhibition of voltage-dependent K^+ channels and by stimulation of L-type Ca^{2+} channels via latrophilin in β -cells*. J. Biol. Chem., **2006**, 281: p. 5522-5531.
- Monerrat, C., F. Boal, F. Grise, A. Hemar, and J. Lang, *Synaptotagmin 8 is expressed both as a calcium-insensitive soluble and membrane protein in neurons, neuroendocrine and endocrine cells*. Biochim. Biophys. Acta - Mol. Cell Res., **2006**, 1763: p. 73-81.
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Zhang, H., H. Yasrebi-Nejad, and J. Lang, *G-protein βg-binding domains regulate insulin exocytosis in clonal pancreatic β-cells*. FEBS Lett., **1998**. 424: p. 202-206.

Lang, J., M. Fukuda, H. Zhang, K. Mikoshiba, and C.B. Wollheim, *The first C2 domain of synaptotagmin is required for exocytosis of insulin from pancreatic beta-cells: action of synaptotagmin at low micromolar calcium*. EMBO J., **1997**. 16: p. 5837-5846.

Lang, J., H. Zhang, V.V. Vaidyanathan, K. Sadoul, H. Niemann, and C.B. Wollheim, *Transient expression of botulinum neurotoxin C1 light chain differentially inhibits calcium and glucose induced insulin secretion in clonal β-cells*. FEBS Lett., **1997**. 419: p. 13-17.

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Lang, J., I. Nishimoto, T. Okamoto, R. Regazzi, C. Kiraly, U. Weller, and C.B. Wollheim, *Direct control of exocytosis by receptor-mediated activation of the heterotrimeric GTPases G_i and G_o or by the expression of their active G alpha subunits*. EMBO J., **1995**. 14: p. 3635-3644.

Regazzi, R., C.B. Wollheim, J. Lang, J.M. Theler, O. Rossetto, C. Montecucco, K. Sadoul, U. Weller, M. Palmer, and B. Thorens, *VAMP-2 and cellubrevin are expressed in pancreatic beta-cells and are essential for Ca²⁺-but not for GTP gamma S-induced insulin secretion*. EMBO J., **1995**. 14: p. 2723-2730.

Sadoul, K., J. Lang, C. Montecucco, U. Weller, R. Regazzi, S. Catsicas, C.B. Wollheim, and P.A. Halban, *SNAP-25 is expressed in islets of Langerhans and is involved in insulin release*. J. Cell Biol., **1995**. 128: p. 1019-1028.

Juge-Aubry, C.E., H. Liang, J. Lang, J.W. Barlow, and A.G. Burger, *Synthesis and characterization of anti-idiotypic anti-T4 antibodies*. Eur. J. Endocrinol., **1994**. 130: p. 107-112.

Kiss, J.Z., C. Wang, S. Olive, G. Rougon, J. Lang, D. Baetens, D. Harry, and W.F. Pralong, *Activity-dependent mobilization of the adhesion molecule polysialic NCAM to the cell surface of neurons and endocrine cells*. EMBO J., **1994**. 13: p. 5284-5292.

Lang, J., F. Boulay, P. Parker, P. Gierschik, and C.B. Wollheim, *Regulation of cytosolic calcium and insulin secretion by galanin and ATP receptors: interactions of pertussis-toxin-sensitive and -insensitive signalling pathways*. Biochem. J., **1994**. 303 (Pt 3): p. 885-891.

Lang, J., F. Boulay, G. Li, and C.B. Wollheim, *Conserved transducer coupling but different effector linkage upon expression of the myeloid fMet-Leu-Phe receptor in insulin secreting cells*. EMBO J., **1993**. 12: p. 2671-2679.

Ammer, H., L. Nice, J. Lang, and R. Schulz, *Regulation of G proteins by chronic opiate and clonidine treatment in the guinea pig myenteric plexus*. J. Pharmacol. Exp. Ther., **1991**. 258: p. 790-796.

Costa, T., J. Lang, C. Gless, and A. Herz, *Spontaneous association between opioid receptors and GTP-binding regulatory proteins in native membranes: specific regulation by antagonists and sodium ions*. Mol. Pharmacol., **1990**. 37: p. 383-394.

Lang, J., *Purification and characterization of subforms of the guanine-nucleotide-binding proteins G alpha i and G alpha o*. Eur. J. Biochem., **1989**. 183: p. 687-692.

Lang, J. and T. Costa, *Chronic exposure of NG 108-15 cells to opiate agonists does not alter the amount of the guanine nucleotide-binding proteins Gi and Go*. J. Neurochem., **1989**. 53: p. 1500-1506.

Lang, J. and T. Costa, *Chronic naloxone treatment of NG 108-15 cells alters the function but not the amount of pertussis toxin substrates*. Adv. Biosci., **1989**. 75: p. 703-706.

Lang, J. and R. Schulz, *Chronic opiate receptor activation in vivo alters the level of G-protein subunits in guinea-pig myenteric plexus*. Neuroscience, **1989**. 32: p. 503-510.

Lang, J. and T. Costa, *Distribution of the alpha-subunit of the guanine nucleotide-binding protein Gi2 and its comparison to G alpha o*. J. Recept. Res., **1989**. 9: p. 313-329.

Toselli, M., J. Lang, T. Costa, and H.D. Lux, *Direct modulation of voltage-dependent calcium channels by muscarinic activation of a pertussis toxin-sensitive G-protein in hippocampal neurons*. Pflugers Arch., **1989**. 415: p. 255-261.

Lang, J. and T. Costa, *Antisera against the 3-17 sequence of rat G alpha i recognize only a 40 kDa G-protein in brain*. Biochem. Biophys. Res. Commun., **1987**. 148: p. 838-848.

Przewlocki, R., T. Costa, J. Lang, and A. Herz, *Pertussis toxin abolishes the antinociception mediated by opioid receptors in rat spinal cord*. Eur. J. Pharmacol., **1987**. 144: p. 91-95.

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Revues (7)

B. Hastoy, A. Clark, P. Rorsman, J. Lang, *Fusion pore in exocytosis: more than an exit gate? A β-cell perspective*, Cell Calcium 2017, 68:45-61.

Renaud S, Catargi B, Lang J., Biosensors in Diabetes: How to get the most out of evolution and transpose it into a signal. IEEE Pulse. 2014, 5:30-4. doi: 10.1109/MPUL.2014.2309577.

Rigalleau, V., J. Lang, and H. Gin, *Etiologie et physiopathologie du diabète de type 2*. Encyclopédie Médico-chirurgicale, **2007**, in press.

Lang, J., *PIPs and pools in insulin secretion*. Trends Endocrinol. Metab., **2003**. 14: p. 297-299.

Lang, J., *Molecular mechanisms and regulation of insulin exocytosis as a paradigm of endocrine secretion*. Eur. J. Biochem., **1999**. 259: p. 3-17.

Wollheim, C.B., J. Lang, and R. Regazzi, *Regulation of exocytosis by Ca²⁺ and G-proteins*. Diabetes Rev., **1996**. 4: p. 277-297.

Wollheim, C.B. and J. Lang, *A game plan for exocytosis*. Trends Cell Biol., **1994**. 4: p. 339-341.

Chapitres de Livres (3)

Raoux, M., G. Bontorin, Y. Bornat, J. Lang, and S. Renaud, *Bioelectronic sensing of insulin demand*, in *Biohybrid Systems*, R. Jung, Editor. in press, Wiley-VCH.

Lang, J., R. Regazzi, and C.B. Wollheim, *Clostridial toxins and endocrine secretion: Their use in insulin-secreting cells*, in Bacterial toxins: tools in cell biology, K. Aktories, Editor. **1997**, Chapman & Hall: Weinheim. p. 217-240.

Lang, J., *Guanine nucleotide binding proteins and their coupling to opioid receptors*, in Neurobiology of Opioids, O.F.X. Almeida and T.S. Shippenberg, Editors. 1990, Springer: Heidelberg. p. 121-140.

Brevets (1)

Lang, J., S. Renaud, B. Catargi, M. Raoux, Y. Bornat, and G. Charpentier, Capteur pour la mesure des besoins d'insuline d'un patient et procédé de fabrication de celui-ci 13.1.2010: France N. 1050202 (PCT extension WO/2011/086105)