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## BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
<b>Alejandra Tomás</b>	Senior Lecturer, Department of Metabolism, Digestion and Reproduction (MDR), Imperial College London, UK

### EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	MM/YYYY	FIELD OF STUDY
University of Valencia, Spain	BSc	06/1998	Biochemistry
University of Paris-Sud, France	MSc	09/1999	Molecular Cell Biology
University College London, UK	PhD	03/2003	Biochemistry

### Employment History:

2020 – present	Senior Lecturer, Imperial College London, UK
2018 – 2020	Non-Clinical Lecturer, Imperial College London, UK
2015 – 2018	Early Career Researcher, Imperial College London, UK
2011 – 2015	Senior Research Associate, University College London, UK
2008 – 2011	Assistant Lecturer, University of Geneva, Switzerland
2003 – 2008	Postdoctoral Research Associate, University of Geneva, Switzerland

### Course Organisation and Lecturing:

2021 – present	Director, MSc Applied Genomics, Imperial College London, UK
2018 – present	Module Lead, MSc Applied Genomics, Imperial College London, UK
2018 – present	Lecturer, MSc Molecular Medicine, Imperial College London, UK
2018 – 2021	Coordinator, MSc Applied Genomics, Imperial College London, UK

### Panel and Committee Membership:

2020 – present	MDR Academic Promotions Panel
2020 – present	MDR Research Committee
2019 – present	Postgraduate Student Mitigating Circumstances Panel
2019 – present	MDR People and Culture Committee
2019 – present	MDR Postgraduate Committee
2018 – present	Section Representative, PhD Assessments

### Awards and Honours:

2019 Fellowship of the Higher Education Academy (FHEA), Advance HE

- 2008 American Society for Cell Biology (ASCB) Women in Cell Biology Childcare Award, 48th Annual ASCB Meeting, San Francisco, California, USA
- 2008 Best Poster Presentation Award, Swiss Society of Endocrinology and Diabetology (SSED) Annual Meeting, Bern, Switzerland
- 2005 European Association for the Study of Diabetes (EASD) Travel Grant Award, 41st Annual Meeting, Athens, Greece
- 2004 EASD Travel Grant Award, 40th Annual Meeting, Munich, Germany
- 1999 Graduate School Research Scholarship, University College London, London, UK
- 1998 MSc Studentship, Paris-Sud University, Orsay, France
- 1997 Erasmus Studentship, Bancaixa, Valencia, Spain

**External Funding Summary (list current and pending grant support):**

- In prep Commercial contract UREKA PHARMA: “Treating non-alcoholic steatohepatitis with incretin analogues”. Co-Investigator; Principal Investigator: Dr B. Jones.
- July 2021 Lilly Research Award Program (LRAP): “The effects of ligand, genotype and tissue diversity on GIPR trafficking responses”. Co-Investigator (with Dr B. Jones and Dr K. Sloop); amount awarded: \$264,995.
- April 2021 BBSRC 20ALERT equipment grant: “Optical Fluorescence Micro and Nanoscopy to determine and quantify functional molecular interactions and dynamics across time and length scales”. Co-Investigator; Principal Investigator: Dr J. Bernardino de la Serna; amount awarded: £624,274.60.
- Jan 2021 Commonwealth PhD Scholarship: “Regulation of beta cell incretin responses by the lipid microenvironment” (Affiong Oqua). Sponsor/PI; amount awarded: £167,832.
- Jan 2021 DUK PhD Scholarship: “Spatiotemporal Control of Signaling of the GLP-1R Variant Ala316Thr in Pancreatic Beta Cells”. Principal Supervisor; amount awarded: £199,080.
- Dec 2019 EFSD/Boehringer Ingelheim European Research Programme on “Multi-System Challenges in Diabetes”: “Understanding the tissue-specific effects of biased GLP-1 receptor agonism in type 2 diabetes”. Co-Investigator; Principal Investigator: Dr B. Jones; amount awarded: £122,974.90.
- May 2019 Sun Pharmaceutical Industries: “Functional Studies on Novel GLP-1R Agonists”. Co- Investigator; Principal Investigator: Prof G.A. Rutter; amount awarded: £232,800.
- Mar 2018 MRC Project Grant: “Targeting GLP-1 Receptor Trafficking to Improve Therapies for Type 2 Diabetes”. Principal Investigator, grant number MR/R010676/1; amount awarded: £702,219.

- Sep 2016 DUK Early Career Small Grant: “Modulation of pancreatic beta-cell cytokine-induced apoptosis by p38-dependent ligand-independent activation of epidermal growth factor receptor”. Principal Investigator, grant number 16/0005441; amount awarded: £15,000.
- Mar 2015 MRC New Investigator Research Grant: “Role and regulation of GLP-1 receptor trafficking in pancreatic beta cells”. Principal Investigator, grant number MR/M012646, amount awarded: £484,663.

### Publications:

- 1 Jones B., Burade V., Manchanda Y., Ramchunder Z., Carrat G., Nguyen-Tu M., Marchetti P., Piemonti L., Leclerc I., Rajamannar T., Vilsboll T., Thorens B., **Tomas A.\***, Rutter G.A.\*, In vivo and in vitro characterisation of GL0034, a novel long-acting GLP-1 receptor agonist. *Under Review*.
- 2 Imbernon M., Saponaro C., Cederberg Helms H. C. C., Zubiaga L., Bitsi S., Wemelle E., Auger F., Duquenne D., Fernandois D., **Tomas A.**, Chen S., Salem V., Deligia E., Acosta-Montalvo A., Gmyr V., Muhlemann M, Kerr-Conte J., Denis R. G. P., Herrera Moro Chao D., Beiroa D., Pfrieder F., Staels B., Knauf C., Pattou F., Brodin B., Jones B, Luquet S., Bonner C., Prevot V., Tancocytes Control Hypothalamic Liraglutide Uptake and its Anti-Obesity and Insulin Secretagogue Actions. *Under Review*.
- 3 Ast J., Novak A. N., Podewin T., Fine N. H. F., Jones B., **Tomas A.**, Birke R., Roßmann K., Mathes B., Eichhorst J., Lehmann M., Linnemann A. K., Hodson D. J., Broichhagen J., An expanded LUXendin color palette for GLP1R detection and visualization in vitro and in vivo. *Under Review*. MedRxiv doi: <https://doi.org/10.33774/chemrxiv-2021-7rngq>
- 4 Cheung R., Pizza G., Chabosseu P., Rolando D., **Tomas A.**, Burgoyne T., Salowka A., Macklin A., Cao Y., Nguyen-Tu M-S., Marchetti P., Shapiro J., Piemonti L., de Koning E., Leclerc I., Sakamoto K., Smith D.M, Rutter G.A., Martinez-Sanchez A., Glucose-dependent miR-125b is a negative regulator of  $\beta$ -cell function. *Under Review*. BioRxiv doi: <https://doi.org/10.1101/2021.05.17.444559>
- 5 Lagou V., Jiang L., Ulrich A., Zudina L., Gutierrez Gonzalez K., Balkhiyarova Z. *et al.* (including **Tomas A.**). Random glucose GWAS in 493,036 individuals provides insights into diabetes pathophysiology, complications and treatment stratification. *Under review*. MedRxiv doi: <https://doi.org/10.1101/2021.04.17.21255471>
- 6 Georgiadou E., Muralidharan C., Martinez M., Chabosseu P., **Tomas A.**, Yong S., *et al.* Mitofusins Mfn1 and Mfn2 are required in the  $\beta$ -cell to preserve glucose- but not incretin-stimulated insulin secretion. *Under review*. BioRxiv doi: <https://doi.org/10.1101/2020.04.22.055384>
- 7 McGlone E.R., Manchanda Y., Jones B., Pickford P., Carling D., Bloom S.R., Tan T.\*, **Tomas A.\***, Receptor Activity-Modifying Protein 2 (RAMP2) alters glucagon receptor trafficking in

hepatocytes with functional effects on receptor signaling. *Mol Metab.* 2021 Jul 13;53:101296.

**8** Marzook A., Chen S., Pickford P., Lucey M., Wang Y., Corrêa Jr I., *et al.* (co-senior author: **Tomas A.**); Evaluation of efficacy- versus affinity-driven agonism with biased GLP-1R ligands P5 and exendin-F1. *Biochem Pharmacol* 2021 Aug;190:114656.

**9** Lucey M., Ashik T., Marzook A., Wang Y., Gouldin J., Oishi A., *et al.* (co-senior author: **Tomas A.**); Acylation of the incretin peptide exendin-4 directly impacts GLP-1 receptor signalling and trafficking. *Mol Pharmacol* 2021 Jul 27;MOLPHARM-AR-2021-000270.

**10** de Jesus D.S., Mak T.C.S., Wang Y-F., von Ohlen Y., Bai Y., Kane E., Chabosseau P., Chahrour C.M., Distaso W., Salem V., **Tomas A.**, Stoffel M., Rutter G.A., Latreille M., Dysregulation of a Pdx1/Ovol2/Zeb2 axis in dedifferentiated  $\beta$ -cells triggers the induction of genes associated with epithelial-mesenchymal transition in diabetes. *Mol Metab.* 2021 May 12;101248.

**11** Marzook A., **Tomas A.**, Jones B., The interplay of glucagon-like peptide-1 receptor trafficking and signalling in pancreatic beta cells. *Front. Endocrinol.* 2021 May 10;12:678055.

**12** Pickford P., Lucey M., Rujan R.M., McGlone E.R., Bitsi S., Ashford F.B., Corrêa I.R. Jr, Hodson D.J., **Tomas A.**, Deganutti G., Reynolds C.A., Owen B.M., Tan T.M., Minnion J., Jones B., Bloom S.R., Partial agonism improves the anti-hyperglycaemic efficacy of an oxyntomodulin-derived GLP-1R/GCGR co-agonist. *Mol Metab.* 2021 Apr 29;101242.

**13** Arcones A.C., Vila-Bedmar R., Mirasierra M., Cruces-Sande M., Vallejo M., Jones B.J., **Tomas A.**, Mayor Jr, F. and Murga C., GRK2 regulates GLP-1R-mediated early phase insulin secretion in vivo. *BMC Biol.* 2021 Mar 3;19(1):40.

**14** Manchanda Y., Bitsi S., Kang Y., Jones B., **Tomas A.**, Spatiotemporal control of GLP-1 receptor activity. *Curr. Opin. Endocr. Metab. Res.* 2021 Feb; 16:19-27.

**15** Jones B., McGlone E.R., Fang Z., Pickford P, Corrêa I.R. Jr, Oishi A., Jockers R., Inoue A., Kumar S., Görlitz F., Dunsby C., French P.M., Rutter G.A., Tan T.M., **Tomas A.**, Bloom S.R., Genetic and biased agonist-mediated reductions in  $\beta$ -arrestin recruitment prolong cAMP signalling at glucagon family receptors. *J Biol Chem.* 2020 Dec 1;296:100133.

**16** Xu W., Ashford F. B., Bitsi S., Schiffer L., Qadir M. M. F., Arlt W., **Tomas A.**, Hodson D. J., Mauvais-Jarvis F., Testosterone enhances GLP-1 efficacy at the plasma membrane and endosomes to augment insulin secretion in male pancreatic  $\beta$  cells. *Under Review.* *BioRxiv* doi: <http://doi.org/10.1101/2020.05.12.081588>

**17** Fang Z., Chen S., Manchanda Y., Bitsi S., Pickford P., David A., Shchepinova M.M., Corrêa Jr I.R., Hodson D.J., Broichhagen J., Tate E.W., Reimann F., Salem V., Rutter G.A., Tan T., Bloom S.R., **Tomas A.**\*, Jones B.\*, Ligand-Specific Factors Influencing GLP-1 Receptor Post-

Endocytic Trafficking and Degradation in Pancreatic Beta Cells. *International Journal of Molecular Sciences*, 2020; 21(21), 8404.

**18** Pickford P., Lucey M., Fang Z., Bitsi S., Broichhagen J., Hodson D., Minnion J., Rutter G.A., Bloom S., **Tomas A.\***, Jones B.J.\*, Differences in signalling, trafficking and glucoregulatory properties of glucagon-like peptide-1 receptor agonists exendin-4 and lixisenatide. *Br. J. Pharmacol*, 2020; 177(17):3905-3923.

**19** Carrat G.R., Haythorne E., **Tomas A.**, Haataja L., Müller A., Arvan P., Piunti A., Cheng K., Huang M., Pullen T.J., Georgiadou E., Stylianides T., Amirruddin N.S., Salem V., Distaso W., Cakebread A., Heesom K.J., Lewis P.A., Hodson D.J., Briant L.J., Fung A.C.H., Sessions R.B., Alpy F., Kong A.P.S., Benke P.I., Torta F., Teo A.K.K., Leclerc I., Solimena M., Wigley D.B., Rutter G.A., The type 2 diabetes gene product STARD10 is a phosphoinositide binding protein that controls insulin secretory granule biogenesis. *Mol Metab* 2020; 13;101015.

**20** Fang Z., Chen S., Pickford P., Broichhagen J., Hodson D.J., Corrêa Jr I.R., Kumar S., Görlitz F., Dunsby C., French P.M.W., Rutter G.A., Tan T., Bloom S.R., **Tomas A.\***, Jones B.\*, The influence of peptide context on signalling and trafficking of glucagon-like peptide-1 receptor biased agonists. *ACS Pharmacol. Transl. Sci.* 2020; 3,2,345-360.

**21** Lucey M., Pickford P., Minnion J., Ungewiss J., Schoeneberg K., Rutter G.A., Bloom S.R., **Tomas A.\***, Jones B.\*, Disconnect between signalling potency and in vivo efficacy of pharmacokinetically optimised biased glucagon-like peptide-1 receptor agonists. *Mol. Metab.* 2020; 8:100991.

**22** Ast J., Arvaniti A., Fine N.H.F., Nasteska D., Ashford F.B., Stamataki, Z., Koszegi Z., Bacon A., Jones B.J., Lucey M., Sasaki S., Brierley D., Hastoy B., **Tomas A.**, D'Agostino G., Reimann F., Lynn F., Reissaus C.A., Linnemann A.K., D'Este E., Calebiro D., Trapp S., Johnsson K., Podewin T., Broichhagen J., Hodson D.J., Super-resolution Microscopy Compatible Fluorescent Probes Reveal Endogenous Glucagon-Like peptide-1 Receptor Distribution and Dynamics. *Nat. Commun.* 2020; 24;11(1):467.

**23** Pernaute B., Sánchez Nieto J.M., Pérez-Montero S., di Gregorio A., Lima A., Lawlor K., Bowling S., Liccardi G., **Tomás A.**, Meier P., Rutter G.A., Barbaric I., Rodríguez T.A., DRP1-mediated regulation of mitochondrial dynamics determines the apoptotic response upon embryonic differentiation. *Under review*. BioRxiv doi: <https://doi.org/10.1101/835751>

**24** Khan R., **Tomas A.**, Rutter G.A., Effects on Pancreatic Beta and other Islet Cells of the Glucose-dependent Insulinotropic Polypeptide. *Peptides* 2019; 18:170201.

**25** **Tomas A.**, Jones B., Leech C., New Insights into Beta-Cell GLP-1 Receptor and cAMP Signaling. *J Mol Biol.* 2019; S0022-2836(19)30518-2.

**26** Fremaux J., Venin C., Mauran L., Zimmer R., Koensgen F., Rognan D., Bitsi S., Lucey M.A., Jones B.J., **Tomas A.**, Guichard G., Goudreau S., Ureidopeptide GLP-1 analogues with prolonged activity in vivo via signal bias and altered receptor trafficking. *Chem Sci.* 2019; 10:9872-9.

- 27** Buenaventura T., Bitsi S., Laughlin, W.E., Burgoyne T., Lyu Z., Oqua A.I., Norman H., McGlone E.R., Klymchenko A.S., Corrêa Jr I.R., Walker A., Inoue A., Hanyaloglu A., Grimes J., Koszegi Z., Calebiro D., Rutter G.A., Bloom S.R., Jones B.\* , **Tomas A.\***, Agonist-induced nanodomain clustering drives GLP-1 receptor responses in pancreatic beta cells. *PLoS Biol.* 2019; 17(8):e3000097.
- 28** Watson S., Duff J., Bardi I., Zabielska M., Atanur S., Jabbour R., Simon A., **Tomas A.**, Smoleński R., Harding S., Perbellini F., Terraciano C.M.N., Biomimetic electromechanical stimulation to maintain adult myocardial slices in vitro. *Nat. Commun.* 2019; 15;10(1):2168.
- 29** Jones B., Buenaventura T., Kanda N., Chabosseu P., Owen B., Scott R., Goldin R., Angkathunyakul N., Corrêa Jr I.R., Bosco D., Johnson P.R., Piemonti L., Marchetti P., Shapiro A.M.J., Cochran B.J., Hanyaloglu A.C., Inoue A., Tan T., Rutter G.A., **Tomas A.\***, Bloom S.R.\* , Targeting GLP-1 receptor trafficking to improve agonist efficacy. *Nat. Commun.* 2018; 9(1):1602.
- 30** Podewin T., Ast J., Broichhagen J., Fine N., Nasteska D., Leippe P., Gailer M., Buenaventura T., Kanda N., Jones B., M’Kadmi C., Banères J-L., Marie J., **Tomas A.**, Trauner D., Hoffmann-Röder A., Hodson D., Conditional and reversible activation of class A and B G protein-coupled receptors using tethered pharmacology. *ACS Central Science* 2018; 4(2):166-79.
- 31** Buenaventura T., Kanda N., Douzenis P.C., Jones B., Bloom S.R., Chabosseu P., Corrêa Jr I.R., Bosco D., Piemonti L., Marchetti P., Johnson P.R., Shapiro A.J., Rutter G.A., **Tomas A.**, A Targeted RNAi Screen Identifies Endocytic Trafficking Factors that Control GLP-1 Receptor Signaling in Pancreatic Beta Cells. *Diabetes.* 2018; 67(3):385-99.
- 32** Jones B., Bloom S.R., Buenaventura T., **Tomas A.\***, Rutter G.A.\* , Control of insulin secretion by GLP-1. *Peptides* 2018; 100:75-84.
- 33** Jones B.J., Scopelliti R., **Tomas A.**, Bloom S.R., Hodson D.J., Broichhagen J., Potent Prearranged Positive Allosteric Modulators of the Glucagon-like Peptide-1 Receptor. *ChemistryOpen.* 2017; 6(4):501-5.
- 34** **Tomas A.\***, Jones S.\* , Vaughan S.O., Hochhauser D., Futter C.E., Stress-specific p38 MAPK activation is sufficient to drive EGFR endocytosis but not its nuclear translocation. *J Cell Sci.* 2017; 130(15):2481-90.
- 35** Muriel O., **Tomas A.**, Scott C., Gruenberg J., Moesin and cortactin control actin-dependent multivesicular endosome biogenesis. *Mol Biol Cell.* 2016; 27(21):3305-16.
- 36** **Tomas A.**, Futter C.E., Stress reveals new destination for EGF receptor. *Cell Cycle.* 2015; 14(21):3343-4.
- 37** Solomou A., Meur G., Bellomo E., Hodson D.J., **Tomas A.**, Li S.M., Philippe E., Herrera P.L., Magnan C., Rutter G.A., The Zinc Transporter Slc30a8/ZnT8 Is Required in a Subpopulation

of Pancreatic Alpha-Cells for Hypoglycemia-induced Glucagon Secretion. *J Biol Chem.* 2015 Aug; 290(35):21432-42.

**38 Tomas A.**, Vaughan S.O., Burgoyne T., Sorkin A., Hartley J.A., Hochhauser D., Futter C.E., WASH and Tsg101/ALIX-dependent diversion of stress-internalised EGFR from the canonical endocytic pathway. *Nat. Commun.* 2015 Jun; 6:7324.

**39 Tomas A.**, Futter C.E., Eden E., EGF Receptor Trafficking: Consequences for Signaling and Cancer. *Trends Cell Biol.* 2014 Jan; 24(1):26-34.

**40 Rondas D., Tomas A.**, Soto-Ribeiro M., Wehrle-Haller B., Halban P.A., Novel mechanistic link between focal adhesion remodeling and glucose-stimulated insulin secretion. *J Biol Chem.* 2012 Jan; 287(4):2423-36.

**41 Rondas D., Tomas A.**, Halban P.A., Focal Adhesion Remodeling is Crucial for Glucose-Stimulated Insulin Secretion and Involves Activation of Focal Adhesion Kinase and Paxillin. *Diabetes.* 2011 Apr; 60(4):1146-57.

**42 Tomas A.**, Yermen B., Regazzi R., Pessin J.E., Halban P.A., Regulation of insulin secretion by Phosphatidylinositol-4,5-Bisphosphate. *Traffic.* 2010 Jan; 11(1):123-37.

**43 Hammar E.\* , Tomas A.\***, Bosco D., Halban P.A., Role of the Rho-Rock (Rho-associated kinase) signaling pathway in the regulation of pancreatic beta cell function. *Endocrinology.* 2009 May; 150(5):2072-9.

**44 Marzban L., Tomas A.**, Becker T.C., Rosenberg L., Oberholzer J., Fraser P.E., Halban P.A., Verchere C.B., siRNA-Mediated Suppression of Pro-Islet Amyloid Polypeptide Expression Inhibits Islet Amyloid Formation and Enhances Survival of Human Islets in Culture. *Diabetes.* 2008 Nov; 57(11):3045-55.

**45 Bouzakri K., Ribaux P.\* , Tomas A.\***, Parnaud G., Rickenbach K., Halban P.A., Rab-GAP AS160 is a major downstream effector of PKB/Akt signaling in pancreatic beta-cells. *Diabetes.* 2008 May; 57(5):1195-204.

**46 Jaques F., Jousset H.\* , Tomas A.\***, Prost A.L., Wollheim C.B., Irminger J.C., Demaurex N., Halban P.A., Dual effect of cell-cell contact disruption on cytosolic calcium and insulin secretion. *Endocrinology.* 2008 May; 149(5):2494-505.

**47 Tomas A.**, Meda P., Regazzi R., Pessin J.E., Halban P.A., Munc 18-1 and granuphilin collaborate during insulin granule exocytosis. *Traffic.* 2008 May; 9(5):813-32.

**48 Min L., Leung Y.M., Tomas A.**, Watson R.T., Gaisano H.Y., Halban P.A., Pessin J.E., Hou J.C., Dynamin is functionally coupled to insulin granule exocytosis. *J Biol Chem.* 2007 Nov; 282(46):33530-6.

**49 Yermen B., Tomas A.**, Halban P.A., Pro-survival role of gelsolin in mouse beta-cells. *Diabetes.* 2007 Jan; 56(1):80-7.

**50 Tomas A.**, Yermen B., Min L., Pessin J.E., Halban P.A., Regulation of pancreatic beta-cell insulin secretion by actin cytoskeleton remodelling: role of gelsolin and cooperation with the MAPK signalling pathway. *J Cell Sci.* 2006 May; 119(Pt10):2156-67.

**51 Tomas A.**, Futter C., Moss S.E., Annexin 11 is required for midbody formation and completion of the terminal phase of cytokinesis. *J Cell Biol.* 2004 Jun; 165(6):813-22; Journal cover picture.

**52 Tomas A.**, Moss S.E., Calcium- and cell cycle-dependent association of annexin with the nuclear envelope. *J Biol Chem.* 2003 May; 278(22):20210-6.

\*Equally contributing author.