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**Education:**

- BSc, 1982, University of Newcastle Upon Tyne, UK.
- Ph.D., 1989, University of Cambridge, UK.
- Post Doc. 1989-1993 Johns Hopkins School of Medicine, Baltimore
- Post Doc 1993-1995 The de Duve Institute of International Cellular Pathology, Belgium.

**Research Interest:**

**- Trypanosome lytic factors, antimicrobial high density lipoproteins and their role in innate immunity**

Our laboratory works on trypanosome lytic factors (TLFs), which are antimicrobial high-density lipoproteins that contribute to primate innate immunity. TLFs are characterized by their ability to kill African trypanosomes, which are extracellular protozoan parasites. The unique protein components of TLF are hemoglobin binding protein, Haptoglobin-related protein (Hpr) and a pore forming protein, apolipoprotein L-I (apoL-I).

**Selected Publications:**

- All You Ever Wanted to Know About APOL1 and TLFs and Did Not Dare Ask. Verdi J, Schaub C, Thomson R, Raper J. *Methods Mol Biol.* 2020;2116:463-483. doi: 10.1007/978-1-0716-0294-2\_28. PMID: 32221937
- Apolipoprotein L-1 renal risk variants form active channels at the plasma membrane driving cytotoxicity. Giovinazzo JA, Thomson RP, Khalizova N, Zager P, Malani N, Rodriguez-Boulan EJ, Raper J, Schreiner R. *Elife.* 2020 May 19;9:e51185. doi: 10.7554/eLife.51185. PMID: 32427098
- Cation channel conductance and pH gating of the innate immunity factor APOL1 is governed by pore lining residues within the C-terminal domain. Schaub, C., Verdi, J., Lee, P., Terra, N., Limon, G., Raper, J., & Thomson, R. (2020). Cation channel conductance and pH gating of the innate immunity factor APOL1 is governed by pore lining residues within the C-terminal domain. *The Journal of biological chemistry*, jbc.RA120.014201. Advance online publication. <https://doi.org/10.1074/jbc.RA120.014201> PMID: 32727852
- Inducible Germline IgMs Bridge Trypanosome Lytic Factor Assembly and Parasite Recognition. Verdi J, Zipkin R, Hillman E, Gertsch RA, Pangburn SJ, Thomson R, Papavasiliou N, Sternberg J, Raper J. *Cell Host Microbe.* 2020 May 14:S1931-3128(20)30239-0. PMID: 32416060
- African trypanosomes evade immune clearance by O-glycosylation of the VSG surface coat. Pinger J, Nešić D, Ali L, Aresta-Branco F, Lilic M, Chowdhury S, Kim HS, Verdi J, Raper J, Ferguson MAJ, Papavasiliou FN, Stebbins CE. *Nat Microbiol.* 2018 Aug 3 (8):932-938 PMID: 29988048
- A Primate APOL1 Variant That Kills *Trypanosoma brucei gambiense*. Cooper A, Capewell P, Clucas C, Veitch N, Weir W, Thomson R, Raper J, MacLeod A. *PLoS Negl Trop Dis.* 2016 Aug 5;10(8):e0004903. doi: 10.1371/journal.pntd.0004903. eCollection 2016 Aug. PMID: 27494254
- Cloning of the African indigenous cattle breed Kenyan Boran. Yu M, Muteti C, Ogugo M, Ritchie WA, Raper J, Kemp S. *Anim Genet.* 2016 Apr 25. doi: 10.1111/age.12441. PMID: 27109292
- BH3 domain-independent apolipoprotein L1 toxicity rescued by BCL2 prosurvival proteins. Heneghan JF, Vondorpe DH, Shmukler BE, Giovinazzo JA\*, Raper J, Friedman DJ, Pollak MR, Alper SL. *Am J Physiol Cell Physiol.* 2015 Sep 1;309(5):C332-47. doi: 10.1152/ajpcell.00142.2015. PMID: 26108665
- Transient expression of proteins by hydrodynamic gene delivery in mice. Kovacsics D,

Raper J. J Vis Exp. 2014 May 5;(87).PMID: 24837006

- Evolution of the primate trypanolytic factor APOL1. Thomson R, Genovese G, Canon C#, Kovacsics D, Higgins MK, Carrington M, Winkler CA, Kopp J, Rotimi C, Adeyemo A, Doumatey A, Ayodo G, Alper SL, Pollak MR, Friedman DJ, Raper J. Proc Natl Acad Sci U S A. 2014 May 20;111(20) PMID: 24808134

- Parasitology: Molecular one-upmanship. Raper J, Friedman DJ. Nature. 2013 Sep 19;501(7467):322-3. doi: 10.1038/501322a. PMID: 24048062

- Structure of the trypanosome haptoglobin-hemoglobin receptor and implications for nutrient uptake and innate immunity. Higgins MK, Tkachenko O, Brown A, Reed J, Raper J, Carrington M. Proc Natl Acad Sci U S A. 2013 Jan 29;110(5):1905-10.

- Frevert U, Movila A, Nikolskaia OV, Raper J, Mackey ZB, et al. (2012) Early Invasion of Brain Parenchyma by African Trypanosomes. PLoS ONE 7(8):e43913.

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- Lukeš J, Raper J., (2010) Prophylactic antiparasitic transgenesis for human parasitic disease? Mol Ther. 18(10):1745-1747.

- Thomson, R., Molina-Portela, M.P., Mott, H., Carrington, M., and Raper, J. (2009) Hydrodynamic gene delivery of baboon trypanosome lytic factor eliminates animal and human infective African trypanosomes. Proc. Nat. Acad. Sci. 106:19509-195147

- Thomson, R., Samanovic, M. and Raper, J. (2009) Activity of Trypanosome Lytic Factor: a novel component of innate immunity. Future Microbiology 4(7): 789-796

- Bettiol, E., Samanovic, M., Murkin, A. S., Raper, J., Buckner, F. and Rodriguez, A. (2009) Identification of three classes of heteroaromatic compounds with activity against intracellular Trypanosoma cruzi by chemical library screening. PLoS Neglected Tropical Diseases Feb;3(2):e384.

- Samanovic, M., Molina-Portela, M.P., Chessler, A-D.C., Burleigh, B.A., and Raper, J. (2009) Trypanosome Lytic Factor, an Antimicrobial High Density Lipoprotein, Ameliorates Leishmania Infection. PLoS Pathogens Jan;5(1):e1000276.

- Molina Portela, M.P., Samanovic, M., and Raper, J. (2008) Distinct roles of apolipoprotein components within the trypanosome lytic factor complex revealed in a novel transgenic mouse model. J. Exp. Med. 205: 1721-1728.