

Biographical Sketch

Salete M. Newton, Ph. D.

Associate Research Professor of Chemistry and Biochemistry
University of Oklahoma, Norman, OK 73019

EDUCATION

Bachelor in Biology, Universidade de Sao Paulo, 1981

Ph. D. in Biochemistry, Universidade de Sao Paulo, 1986

POSITIONS HELD

Post-doctoral, Stanford University, Department of Microbiology and Immunology. Laboratory of Dr. Bruce Stocker. From July 1986 to July 1989.

Assistant Professor, Universidade de São Paulo, Departamento de Microbiologia, Instituto de Ciências Biomédicas, July 1985 to August 1997.

Visiting Associate Scientist, Institute Pasteur, Unite de Programmation Moleculaire et Toxicologie Genetique, Paris, FRANCE, December 1993 to August 1995.

Visiting Professor at the Department of Chemistry and Biochemistry, University of Oklahoma, Norman, OK, 73019, 1995-2000.

Research Professor of Biochemistry, Department of Chemistry and Biochemistry, University of Oklahoma, Norman, OK 73019, 2000-present.

Visiting Scientist, Faculte de Medecine, Institut Necker Enfants Malades, INSERM U570, Paris, FRANCE, 2002-2003

AWARDS, ORGANIZATIONS & PROFESSIONAL SERVICE

Chercheur de Fondation de Research Medcale (FRM), Institute Pasteur, Paris, 1993

American Society for Microbiology (ASM) International Professorship, 2001, Universidade de Sao Paulo, Brasil

Chercheur de Institut Nationale de la Sante et la Recherche Medicale (INSERM), Institut Necker, Paris, 2002

American Society for Microbiology, Member

Journal Reviewer: Mol. Microbiol., J. Bacteriol., Infect. Immun.

CURRENT GRANT SUPPORT

1. Ligand-Gated Transport through FepA. **S.M. Newton, Co-Investigator**, (Phillip E. Klebba, Ph. D., P.I.) National Institutes of Health, 2R01-GM53836-14. 8/1/2006-7/31/2010. \$311,650/\$1,117,644
2. TonB, peptidoglycan and bacterial iron acquisition. **S.M. Newton, Co-Investigator**, (Phillip E. Klebba, Ph. D., P.I.) 3/1/2010 - 2-28, 2013. National Science Foundation. \$205,000/\$615,000.

PAST GRANT SUPPORT

- 1 Ligand-Gated Transport through FepA **S.M. Newton, Co-Investigator**, (Phillip E. Klebba, Ph. D., P.I.) National Institutes of Health, 2R01-GM53836-14. **Administrative Supplement** 9/1/09-8/31/10. \$123, 535.
2. Mechanism of Ferric Enterobactin Uptake by FepA. **S.M. Newton, Co-Investigator**, (Phillip E. Klebba, Ph. D., P.I), National Science Foundation, MCB-0417694. 9/1/00-8/31/07. \$90,000/\$270,000.
3. Ligand-gating of transport through FepA **Salete M. C. Newton, Ph. D., Co-Investigator** (P.E. Klebba, Ph. D., P.I.), National Institutes of Health,. 2R01GM53836-06. 4/1/00-3/31/05.

\$438,131/\$2,152,320.

4. Role of the secreted protein SvpA in the pathogenesis of *Listeria*. **Saleta M. C. Newton, Ph. D., P.I.** Institute Nationale de la Sante et la Recherche Medicale (INSERM). 9/1/02-6/30/03. \$33,500.
5. Cytofluorimetry of vaccine epitope exposure in bacteria. (**S. M. C. Netwon, Ph.D., P.I.**), Oklahoma Center for Advancement of Science and Technology (OCAST). 000072, 9/1/99-8/31/02, \$44,977/\$144,027.
6. Molecular Biological approaches to bacterial cell wall biochemistry. **Saleta M.C. Newton, Ph. D., Co-Investigator** (P.E. Klebba, Ph. D. P.I.). American Society for Microbiology (ASM). 10/1/2001 - 9/31/2002. \$4000.

PUBLICATIONS

1. **Newton, SM.**, Jacob, CO., and Stocker, BA. (1998) [Immune response to a cholera toxin epitope inserted in *Salmonella* flagellin](#). *Science* 244:70-72
2. Wu, J., **Newton, SM.**, Judd, A., Stocker, BA., and Robinson, WS. (1989) [Expression of immunogenic epitopes of hepatitis B surface antigen within hybrid flagellin molecules by a vaccine strain of *Salmonella*](#). *Proc. Natl. Acad. Sci. USA* 86:4726-4730
3. Frankel, G., **Newton, SM.**, Schoolnik, GK., and Stocker, BA. (1989) [Intragenic recombination in a flagellin gene: characterization of the H1-j gene of *Salmonella typhi*](#). *EMBO J.* 8:3149-3152
4. Frankel, G., **Newton, SM.**, Schoolnik, GK., and Stocker, BA. (1989) [Unique sequences in region IV of the flagellin gene of *Salmonella typhi*](#). *Molec. Microbiol.* 3:1379-1383
5. Nnalue, NA., **Newton, SM.**, and Stocker, BA. (1990) [Lysogenization of *Salmonella choleraesuis* by phage 14 increases average length of O-antigen chains, serum resistance and intraperitoneal mouse virulence](#). *Microb. Pathog.* 8:393-402
6. **Newton, SM.**, Manning, WC., Hovi, M., and Stocker, BA. (1990) Aromatic-dependent *Salmonella* with foreign epitope insert in flagellin as live-vaccines. *Vaccines 90*, Cold Spring Harbor, pp. 439-445
7. **Newton, SM.**, Miller, J., Wasley, R., Wilson, A., Rosenberg, LT., and Stocker, BA. (1991) [Segment IV of a *Salmonella* flagellin gene specifies flagellar antigenic epitopes](#). *Molec. Microbiol.* 5:419-425
8. **Newton, SM.**, Kotb, M., Poirier, TP., Stocker, BA., and Beachey, EH. (1991) [Expression and immunogenicity of a Streptococcal M protein epitope inserted in *Salmonella* flagellin](#). *Infec. Immun.* 59:2158-2165
9. **Newton, SM.**, and Stocker, BA. (1991) Insertion of heterologous epitopes in *Salmonella* flagellin. *Mem. Inst. But.* 53:53-58
10. Honore, N., Chanteau, S., Doucet-Populaire, F., Eiglemeier, K., Garnier, T., Georges, C., Launois, P., Limpaboon, P., **Newton, SM.**, Nyang, K. del Portillo, P. Ramesh, GK. Reddy, T., Riedel, JP., Sittisombut, N., Wu-Hunter, S., and Cole, ST. (1993) [Nucleotide sequence of the first cosmid from the *Mycobacterium leprae* Genome Project: structure and function of the rif-str regions](#). *Molec. Microbiol.* 7:207-214
11. Beckers, W., Villa, L., Gonfloni, S., Castagnoli, L., **Newton, SM.**, Cesareni, G., and Ghiara, P. (1993) [Increasing the immunogenicity of protein antigens through the genetic insertion of VQGEESNDK sequence of human IL-1B into their sequence](#). *J. Immunol.* 151:1757-1764
12. Stocker, BA., and **Newton, SM.**, (1994) Insertion of heterologous epitopes in *Salmonella* flagellin. *Int. Rev. Immunol.* 11:133-154
13. **Newton, SM.**, Klebba, PE., Hofnung, M., and Charbit, A. (1995) [Studies on the anaerobically induced promoter nirB and the improved expression of bacterial antigens](#). *Res. Microbiol.* 146:193-202

14. **Newton, SM.**, Joys, TM., Anderson, SA., Kennedy, RC., Hovi, M., and Stocker, BA. (1995) [Expression and immunogenicity of an 18-residue epitope of HIV1- gp41 as insert in the flagellar protein of a *Salmonella* live vaccine.](#) *Res. Microbiol.* 146:203-216
15. **Newton, SM.**, Klebba, PE., Michel, V., Hofnung, M., and Charbit, A. (1996) [Topology of the membrane protein LamB by epitope tagging and a comparison with the X-ray model.](#) *J. Bacteriol.* 178:3447-3456
16. Lo-Man, R., Martineau, P., Deriaud, E., **Newton, SM.**, Jehanno, M., Clement, JM., Fayolle, C., Hofnung, M., and Leclerc, C. (1996) [Control by H-2 Genes of the Th1 Response induced against a foreign antigen expressed by attenuated *Salmonella typhimurium*.](#) *Infect. Immun.* 64:4424-4432
17. Charbit, A., **Newton, SM.**, Klebba, PE., Clement, JM., Fayolle, C., Lo-Man, R., Leclerc, C. and Hofnung, M. (1997) [Expression and Immune response to foreign epitopes in Bacteria. Perspectives for live vaccine development.](#) *Boehring. Inst.Mitt.* 98:135-142
18. Klebba, PE., **Newton, SM.**, Michel, V., Hofnung, M., and Charbit, A. (1997) [Further genetic analysis of the C-terminal external loop region in *Escherichia coli* maltoporin.](#) *Res.Microbiol.* 148: 375-387
19. **Newton, SM.**, J.S. Allen, JS., Cao, Z., Qi, Z., Jiang, X., Sprencel, C., Igo, JD., Foster, SB., Payne, MA., and Klebba, PE. (1997) [Double mutagenesis of a positive charge cluster in the ligand-binding site of the ferric enterobactin receptor, FepA.](#) *Proc. Nat. Acad. Sci. USA* 94:4560-4565.
20. Jiang, X., Payne, Ma., Cao, Z., Foster, SB., Feix, JB., **Newton, SM.**, and Klebba, PE.(1997) [Ligand-specific opening of a gated-porin channel in the outer membrane of living bacteria.](#) *Science* 276:1261-4
21. Payne, MA., Igo, JD., Cao, Z., Foster, SB., **Newton, SM.**, and Klebba, PE. (1997) [Biphasic binding kinetics between FepA and its ligands.](#) *J. Biol Chem.* 272:21950-21955
22. Chen, I., Pizza, M., Rappuoli, R., and **Newton, SM.** (1998) [Effects of the insertion of a nonapeptide from murine IL-1B on the immunogenicity of carrier proteins delivered by live attenuated *Salmonella*.](#) *Arch. Microbiol.* 169:113-119.
23. **Newton, SM.**, Igo, JD., Scott, DC., and Klebba, PE. (1999) [Effects of loop deletions on the binding and transport of ferric enterobactin by FepA.](#) *Mol. Microbiol.* 32: 1153-1165.
24. Carson, SD., Klebba, PE., **Newton, SM.**, and Sparling, PF. (1999) [Ferric enterobactin binding and utilization by gonococcal FetA \(FrpB\).](#) *J. Bacteriol.* 181(9):2895-901.
25. Anderson, C., Bachmeyer, C., Tauber, H., Benz, R., Wang, J., Michel, V., **Newton, SM.**, Hofnung, M., and Charbit, A. (1999) [In vivo and in vitro studies of the major surface loop deletion mutants of the *Escherichia coli* K-12 maltoporin: contribution to maltose and maltooligosaccharide transport and binding.](#) *Mol. Microbiol.* 32:851-867.
26. De Almeida, ME., **Newton, SM.**, and Ferreira, LC. (1999) [Antibody responses against flagellin in mice orally immunized with attenuated *Salmonella* vaccine strains.](#) *Arch Microbiol.* 172(2): 102-108
27. Sprencel, C., Cao, Z., Qi, K., Scott, DC., Montague, MA., Ivanoff, N., Xu, J., Raymond, KM., **Newton, SM.**, and Klebba, PE. (2000) [Binding of ferric enterobactin by the *Escherichia coli* periplasmic protein, FepB.](#) *J. Bacteriol.* 182:5359-5364.
28. Cao, Z., Sprencel, C., Qi, Z., **Newton, SM.**, and Klebba, PE. (2000) [Aromatic components of two ferric enterobactin binding sites in FepA.](#) *Mol. Microbiology* 37:1306-1317.
29. Scott, DC., Cao, Z., Qi, Z., Bauler, M., Igo, JD., **Newton, SM.**, and Klebba, PE. (2001) [Exchangeability of N-termini in the ligand gated porins of *E. coli*.](#) *J. Biol. Chem.* 276:13025-13033.
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31. Cao, Z., Warfel, P., **Newton, SM.**, and Klebba, PE. (2003) [Spectroscopic observations of ferric enterobactin transport.](#) *J. Biol. Chem.* 278:29-38.
32. Annamalai, R., Jin, B., Cao, Z., **Newton, SM.**, and Klebba, PE. (2004) [Recognition of ferric catecholates by FepA.](#) *J. Bacteriol.* 186:3578-3589.

33. Bierne, H., Garandeau, C., Pucciraeli, M., Sabet, C., **Newton, S.**, Portillo, FG., Cossart, P., and Charbit, A. (2004) [Sortase B, a new class of sortase in *Listeria monocytogenes*](#). *J.Bacteriology* 186:1972-1982.
34. **Newton, SM.**, Klebba, PE., Raynaud, C., Shao, Y., Jiang, X., Dubail, I., Archer, C., Frehel, C., and Charbit, A. (2005) [The *svpA-srtB* locus of *Listeria monocytogenes*: Fur-mediated iron regulation and effect on virulence](#). *Mol. Microbiol.* 55:927-40.
35. Jin, B., Shao, Y., Jiang, X., **Newton, SM.**, Charbit, A., and Klebba, PE. Iron acquisition systems of *Listeria*: ferric hydroxamates, hemin and hemoglobin. *Mol Microbiol.* 59 (3): 855-61.
36. Ma, L., Kaserer, WA., Annamalai, R., Scott, DC., Jin, B., Jiang, X., Xiao, Q., Maymani, H., Massia, LM., Ferreira, LC., **Newton, SM.**, and Klebba, PE. (2006) [Evidence of Ball-and-Chain transport of ferric enterobactin through FepA](#). *J Biol Chem.* 282:397-406.
37. Rabsch, W., Ma, L., Wiley, G., Kaserer, WA., Najar, FZ., Beil, B., Schallmeyer, M., Roe, BA., **Newton, SM.**, and Klebba, PE. (2007) [FepA- and TonB-dependent Bacteriophage H8: Receptor Binding and Genomic Sequence](#). *J Bacteriol.* 189:5658-74.
38. Kaserer, WA., Scott, DC., Xiao, Q., Jiang, X., Bauler, M., **Newton, SM.**, and Klebba, PE. (2008) [Insight from TonB hybrid proteins into the mechanism of iron transport through the outer membrane](#). *J Bacteriol.* 190:4001-16.
39. Massis, LM., Sbrogio-Almeida, ME., Braga, CJ., Lauand, C., **Newton, SM.**, Klebba, PE., and Ferreira, LC. (2008) [Anti- flagellin antibody responses elicited in mice orally immunized with attenuated Salmonella enterica serovar Typhimurium vaccine strains](#). *Mem Inst Oswaldo Cruz.* 103:606-10.
39. Smallwood, C., Marco AG., Xiao, Q., Trinh, V., **Newton, SM.**, and Klebba, PE. (2009) [Fluoresceination of FepA during colicin B killing: effects of temperature, toxin and TonB](#). *Mol. Microbiol.* 72:1171-80.
40. Ngweniform, P., Li, D., **Newton, SM.**, Klebba, PE., and Mao, CB., (2009) Self-assembly of drug-loaded liposomes on genetically engineered protein nanotubes: a potential anti-cancer drug delivery vector. *Soft Matter* 5: 954 - 956.
41. Wang, F., Li, D., **Newton, SM.**, Klebba, PE., and Mao, C. (2008) [Genetically Modifiable Flagella as Templates for Silica Fibers: From Hybrid Nanotubes to 1D Periodic Nanohole Arrays](#). *Adv. Funct. Mater.* 18: 4007-4013.
42. **Newton, SM.**, Trinh, V., Pi, H., and Klebba, PE., (2010) [Direct measurement of the outer membrane stage of ferric enterobactin transport: post-uptake binding](#). *J Biol Chem.* 285:17488-97.
43. Xiao, Q., Jiang, X., Shao, Y., **Newton, SM.**, and Klebba, PE., (2011) [Sortase independent and Independent Systems for Acquisition of Haem and Haemoglobin in *Listeria monocytogenes*](#). *Mol. Microbiol.* 80:1581-97
44. Li, D., Qu, X., **Newton, SM.**, Klebba, PE., and Mao, C. (2012) [Morphology-controlled synthesis of silica nanotubes through pH and sequence-responsive morphological change of bacterial flagellar biotemplates](#). *J Mater Chem.* 22:15702-15709.
45. Li, D., **Newton, SM.**, Klebba, PE., and Mao, C. (2012) [Flagellar display of bone-protein derived peptides for studying peptide-mediated biomineralization](#). *Langmuir.*28(47):16338-46.
46. Lill, Y., Kaserer, WA., **Newton, SM.**, Lill, M., Klebba, PE., and Ritchie, K. (2012) [Single molecule study of molecular mobility in the cytoplasm of Escherichia coli](#). *Stat Nonlin Soft Matter Phys.* 86(2 Pt 1):021907
47. Pi, H., Jones, SA., Mercer, LE., Meador, JP., Caughron, JE., Jordan, L., **Newton, SM.**, Conway, T., and Klebba, PE. (2012) [Role of catecholate siderophores in gram-negative bacterial colonization of the mouse gut](#). *PLoS One.* 7(11):e50020
48. Klebba, PE., Charbit, A., Xiao, Q., Jiang, X., **Newton, SM.** (2012) [Mechanisms of iron and haem transport by *Listeria monocytogenes*](#). *Mol Membr Biol.* 29(3-4):69-86.

49. Jordan, LD., Zhou, YY., Smallwood, CR., Lill, Y., Ritchie, K., Yip, W.T., **Newton, SM.**, and Klebba, PE. (2013) [Energy-dependent motion of TonB in the Gram-negative bacterial inner membrane](#). *PNAS*. 110(28):11553-8.
50. Smallwood, CR., Jordan, L., Trinh, V., Schuerch, DW., Gala, A., Hanson, M., Shipelskiy, Y., Majumdar, A., **Newton, SM.**, and Klebba, PE. (2014). [Concerted loop motion triggers induced fit of FepA to ferric enterobactin](#). *J. Gen. Physiol. Jul;144(1):71-80*.
51. Malmirchegini, GR., Sjodt, M., Shnitkind, S., Sawaya, MR., Rosinski, J., **Newton, SM.**, Klebba, PE., and Clubb, RT. (2014). [Novel mechanism of hemin capture by Hbp2, the hemoglobin-binding hemophore from Listeria Monocytogenes](#). *J. Biol Chem. Oct;ppi:jbc.M114.583013*