

## **CURRICULUM VITAE**

**Andrew Lees, Ph.D.**

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### **EDUCATION**

The Johns Hopkins University, Baltimore, MD  
Ph.D. in Biophysics, 1984  
Dissertation Topic: Effects of Brevin and Vitamin D  
Binding Protein on Actin Assembly and  
Disassembly

Harvey Mudd College, Claremont, CA  
Bachelor of Science in Chemistry, June, 1976

### **RESEARCH EXPERIENCE and APPOINTMENTS**

Fina BioSolutions LLC. Rockville, MD  
Scientific Director; Vaccines, bioconjugation, protein purification.  
(Aug, 2006-present).

University of Maryland School of Medicine, Baltimore, MD  
Associate Professor of Medicine (part-time)  
(July 2010-present).

BioExcellence India, Pune, India, Member Scientific Advisory Board  
(July 2009- Present).

Ancora Pharmaceuticals, Inc., Medford, MA. Member Scientific Advisory  
Board. (Dec, 2006-Present).

University of Maryland, College Park, MD  
Senior Scientist Bioprocessing Research and Educational Program. (Oct  
2006- Present).

Dept. of Medicine, Uniformed Services University of the Health  
Sciences, Bethesda, MD  
Research Instructor (1988-1993); Assistant Research Professor  
(1993-1998); Associate Research Professor (1998-1999; adjunct 1999-  
Present) Study of lymphocyte activation, synthesis of antibody  
conjugates, development of vaccine immunoconjugates.

Biosynexus, Inc. Gaithersburg, MD  
Director of Vaccine Development. Vaccine immunoconjugates, protein  
purification. (Aug, 1999- June, 2006).

Virion Systems, Inc., Rockville, MD  
Senior Research Scientist, Vaccine immunoconjugate development. (June,  
1993-July, 1999).

Dept. of Biophysics, The Johns Hopkins School of Medicine, Baltimore, MD Post-Doctoral Fellow under Dr. H.M. Dintzis. Synthesis and study of novel protein and peptide antigens for vaccines. (Oct. 1985-July 1988)

Dept. of Biophysics, The Johns Hopkins University, Baltimore, MD Predoctoral Candidate under Dr. S. Lin. Isolation of actin-binding proteins, control of actin assembly and disassembly; regulation of sugar transport, synthesis of drugs to inhibit sugar uptake. (Sept. 1976-Oct. 1983).

Dept. of Chemistry, Harvey Mudd College, Claremont, CA Research Assistant. Exchange of hydrogen on NADH derivatives (1975-1976), Synthesis of highly oxidized organic bismuth compounds. (Summer, 1975).

Centre de Neurochimie, Universite de Strasbourg, Strasbourg, France. Research Assistant. Lipid composition of dwarf mice brain, purification of a cerebroside sulphatransferase. (Sept 1973-July 1974).

#### **PUBLICATIONS**

1. **Lees, A.,** L.L. Sarlieve, M.M. Nescovic, M. Wintzerth, and P. Mandel. Changes in brain complement during development of mice homozygous for the locus dwarf (dw). *Neurochem. Res.* 2:11, 1977.
2. **Lees, A.** and S. Lin. 7-acetylchtochalasin B: Differential effects on sugar transport and cell motility. *J. Supramol. Struct.* 12:185, 1979.
3. **Lees, A.,** S. Lin, and J.G. Haddad. Comparison of the effects of two serum proteins on actin assembly and disassembly. *Biochem.* 23:3038, 1984.
4. **Lees, A.,** S.C. Morris, G. Thyphronitis, J.M. Holmes, J.K. Inman, and F.D. Finkelman. Rapid stimulation of large specific antibody responses with conjugates of antigen and anti-IgD antibody. *J. Immunol.* 145:3594, 1990.
5. Lindsberg, M-L., M. Brunswick, H. Yamada, A. **Lees,** J.K. Inman, C.H. June, and J. J. Mond. Biochemical analysis of the immune B cell defect in xid mice. *J. Immunol.* 147:3774, 1991.
6. Pecanha, L.M., C.M. Snapper, A. **Lees** and J.J. Mond. Lymphokine control of Type 2 antigen response. IL-10 inhibits IL-5 but not IL-2-induced Ig secretion by T cell-independent antigens. *J. Immunol.* 148:3427, 1992.
7. Snapper, C.M., T. M. McIntyre, R. Mandler, L.M.T. Pecanha, F.D. Finkelman, A. **Lees,** and J. J. Mond. Induction of IgG3 secretion by IFN- $\gamma$ : A model for class switching in response to TI-2 antigens. *J. Exp. Med.* 175:1367, 1992.
8. Campbell, K.A., A. **Lees,** F.D. Finkelman, and D.H. Conrad. Co-crosslinking Fc $\epsilon$ R2/CD23 with B cell surface immunoglobulin modulates B cell activation. *Eur. J. Immunol.* 22:2107, 1992.

9. Finkelman, F.D., A. **Lees**, and S.C. Morris. Antigen presentation by B lymphocytes to CD4<sup>+</sup> T lymphocytes *in vivo*: Importance for B lymphocyte and T lymphocyte activation. *Seminars in Immunol.* 4:247, 1992.
10. Morris, S.C., A. **Lees**, J.K. Inman, and F.D. Finkelman. Role of antigen-specific T cell help in the generation of *in vivo* antibody responses. I. Antigen-specific T cell help is required to generate a polyclonal IgG1 response in anti-IgD antibody-injected mice. *J. Immunol.* 149:3836, 1992.
11. Pecanha, L.M.T., C.M. Snapper, A. **Lees**, H. Yamaguchi, and J.J. Mond. IL-10 inhibits T cell-independent but not T cell-dependent responses *in vitro*. *J. Immunol.* 150:3215, 1993.
12. Snapper, C.M., H. Yamada, D. Smoot, R. Sneed, A. **Lees**, and J.J. Mond. Responses of marginal zone and follicular B cells. Comparative *in vitro* analysis of proliferation, Ig secretion, and Ig class switching by murine marginal zone and follicular B cells. *J. Immunol.* 150:2737, 1993.
13. Pecanha, L.M.T., H. Yamaguchi, A. **Lees**, R.J. Noelle, J.J. Mond, and C.M. Snapper. Dextran-conjugated anti-IgD antibodies inhibit T cell-mediated IgE production but augment the synthesis of IgM and IgG1. *J. Immunol.* 150:2160, 1993.
14. Yamada, H., C.H. June, F.D. Finkelman, M. Brunswick, M.S. Ring, A. **Lees**, and J.J. Mond. Persistent calcium elevation correlates with the induction of sIg-mediated B cell DNA synthesis. *J. Exp. Med.* 177:1613, 1993.
15. Ak, M., J.H. Bower, S.L. Hoffman, M. Sedegah, A. **Lees**, M. Carter, R.L. Beaudoin, and Y. Charoenvit. Monoclonal antibodies of three different immunoglobulin G isotypes produced by immunization with a synthetic peptide or native protein protect mice against challenge with *Plasmodium yoelii* sporozoites. *Infect. Immun.* 61:2493, 1993.
16. Khilko, S.N., M. Corr, L.F. Boyd, A. **Lees**, J.K. Inman, and D.H. Margulies. Direct detection of MHC class I peptide binding to antigenic peptides using surface plasmon resonance. Peptide immobilization and characterization of binding specificity. *J. Biol. Chem.* 268:15425, 1993.
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18. Morris, S.C., A. **Lees**, and F.D. Finkelman. *In vivo* activation of naive T cells by antigen-presenting B cells. *J. Immunol.* 152:3777, 1994.
19. Squire, C.M., E.J. Studer, A. **Lees**, F.D. Finkelman, and D.H. Conrad. Antigen Presentation is enhanced by targeting antigen to the FcεRII by antigen-anti-FcεRII conjugates. *J. Immunol.* 152:4388, 1994.
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- stimulation of large specific antibody responses to poorly immunogenic molecules. *Vaccine* 12:1160, 1994
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  27. Cassels, F.J., D.L. Harboe, R.H. Reid, A. **Lees**, and C.D. Deal. Linear epitopes of colonization factor antigen I and peptide vaccine approach to enterotoxigenic *Escherichia coli*. *J. Ind. Microbiol. Biotech.* 19:66, 1997.
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49. Lopez-Acosta, A., G. Sen and A. **Lees**. Versatile and efficient synthesis of protein-polysaccharide conjugate vaccines using aminoxy reagents and oxime chemistry. *Vaccine*, 24:716, 2006.
50. Ghochikyan A, Petrushina I, **Lees A**, Vasilevko V, Movsesyan N, Karapetyan A, Agadjanyan MG, Cribbs DH. A $\beta$ -immunotherapy for Alzheimer's disease using mannan-amyloid-Beta peptide immunoconjugates. *DNA Cell Biol.* 25:571, 2006
51. Burkhardt, M., A. Lopezacosta, K. Reiter, V. Lopez and **A. Lees**. Purification of soluble CD14 fusion proteins and use in an electrochemiluminescent assay for lipopolysaccharide binding. *Protein Exp. Purif.*, 51:96, 2007.
52. **Lees, A.**, V. Puvanesarajah and C.E. Frasch. Conjugation Chemistry. Pps 163-174 *Pneumococcal Vaccines: The Impact of Conjugate Vaccines*. Eds G.R. Siber, K.P. Klugman and P.H. Makela. ASM Press, Washington DC. 2008.
53. Datta, K, **A. Lees**, LA. Pirofski. Therapeutic Efficacy of a Conjugate Vaccine containing a Peptide Mimotope of the Cryptococcal Capsular Polysaccharide Glucuronoxylomannan (GXM). *Clin. Vaccine Immunol.* 8:1176, 2008.
54. Petrushina I, Ghochikyan A, Mkrtychyan M, Mamikonyan G, Movsesyan N, Ajdari R, Vasilevko V, Karapetyan A, **Lees A**, Agadjanyan MG, Cribbs DH. Mannan-Abeta28 conjugate prevents Abeta-plaque deposition, but

- increases microhemorrhages in the brains of vaccinated Tg2576 (APPsw) mice. *J Neuroinflamm.* 5:42, 2008.
55. Burkhardt, M., C. Sei, **A. Lees**, J. Mond. A rapid opsonic assay for measuring killing of bioluminescent *Staphylococcus epidermidis*. *Hybridoma*, 27:487, 2008.
  56. Chattopadhyay G, Q. Chen, J. Colino, **A. Lees**, CM Snapper. Intact bacteria inhibit the induction of humoral immune responses to bacterial-derived and heterologous soluble T cell-dependent antigens. *J Immunol.* 182:2011, 2009.
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  58. Rezaei N, Wing J, Aghamohammadi A, Carlring J, **Lees A**, Asgarian-Omran H, Pourpak Z, Sarrafnejad A, Kardar GA, Shahrestani T, Masoumi F, Zare A, Saghafi S, Sarrafnejad S, Foster RA, Heath AW, Read RC. B-cell- T-Cell Activation and Interaction in Common Variable Immunodeficiency. *Hum Immunol.* 2010 Jan 21. [Epub ahead of print]
  59. Foster RA, Carlring J, **Lees A**, Borrow R, Ramsay M, Kacsmarski E, Miller E, McKendrick MW, Heath AW, Read RC. Functional T cell deficiency in adolescents who experience serogroup C meningococcal disease despite receiving meningococcal serogroup C conjugate vaccine. *Clin Vaccine Immunol.* 17:1104, 2010.
  60. Simon R, Tennant SM, Yang JY, Schmidlein PJ, **Lees A**, Ernst RK, Pasetti MF, Galen JE and Levine MM. *Salmonella enterica* serovar enteritidis core O polysaccharide conjugated to H;g,m flagellin as a candidate vaccine for protection against invasive infection with *S. enteritidis*. *Inf. Imm.* 79:4240, 2011.

#### **ABSTRACTS**

1. Conrad, D.H., **A. Lees**, F.D. Finkelman, C.M. Squire, and K.A. Campbell. Structure and function of the murine B lymphocyte low affinity receptor for IgE. Miami Winter Symposia, "Advances in Gene Technology" 1990.
2. Yamada, H., C.H. June, **A. Lees**, E.D. Anastassiou, F.D. Finkelman, and G.C. Tsokos. Signal transduction in human B cells by crosslinking of complement receptor 2 (CR2) and simultaneous crosslinking of CR2 and surface IgM (sIgM). *FASEB J.* 4:A1721, 1990.
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- antibody to complement receptor 2 (HBS) coupled to dextran. *FASEB J.* 4:A1698, 1990.
4. **Lees, A., S. Morris, J. Holmes, J. Inman, and F.D. Finkelman.** Induction of large, rapid specific antibody responses with antigen-anti-IgD antibody conjugates. *FASEB J.* 4:A1804, 1990.
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  6. Squire, C.M., **A. Lees, F.D. Finkelman, and D.H. Conrad.** Enhanced antigen presentation by targeting antigen to Fc $\epsilon$ RII (CD23) on B cells using antigen anti-Fc $\epsilon$ RII conjugates. *FASEB J.* 5:A721, 1991.
  7. Snapper, C.M., T.M. McIntyre, R. Mandler, L.M.T. Pecanha, F.D. Finkelman, **A. Lees,** and J.J. Mond. Induction of IgG3 secretion by IFN- $\gamma$ : A model for T-independent class switching in response to TI-2 antigens. *FASEB J.* 6:A1132, 1992.
  8. Finkelman, F.D., **A. Lees,** and S.C. Morris. Anti-CD23 antibody induces antigen-specific T cell tolerance in vivo. *FASEB J.* 6:A1699, 1992.
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  11. **Lees, A., F.D. Finkelman, J.K. Inman, P. Johnson, and J.J. Mond.** Enhanced immunogenicity of protein-dextran conjugates. 8<sup>th</sup> Int. Congress of Immunol., Budapest, Hungary, 1992. p. 563.
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  13. Cassels, F.J., D.L. Jarboe, R.H. Reid, **A. Lees,** and C.D. Deal. Linear epitopes of CFA/I and cross-reactivity between members of the CFA/I family of enterotoxigenic *E. coli* fimbriae. Gordon Research Conference on Molecular Mechanisms of Bacterial Adhesion and Signaling, Newport, RI, Aug 1997.
  14. Taubman, M.A., C.J. Holmberg, B-Y. Ma, D.J. Smith, and **A. Lees.** Immunogenicity of glucan synthesized by Mutans Streptococcal glucosyltransferase. Am. Ass. Dental Res. Minneapolis. March 1998.
  15. **Lees, A., D.E. Shafer, R.F. Schuman, B. Toll, M. Bash, and J.J. Mond.** Protein-polysaccharide conjugate vaccines produced using haloacylated polysaccharides and unmodified protein. 3<sup>rd</sup> National Symposium on Basic Aspects of Vaccines. April 1998.

16. Taubman, M.A., D.J. Smith, C.J. Holmberg, B-Y. Ma, D. Shafer and A. **Lees**. Protein-polysaccharide conjugates as potential caries vaccines. *Int. Ass. Dental Res.*, Nice, Fr. May 1998.
17. **Lees**, A., D.E. Shafer, R.F. Schuman, B. Toll, M. Bash, and J.J. Mond. Protein-polysaccharide vaccines produced using haloacylated polysaccharides and unmodified protein. 11<sup>th</sup> International Pathogenic Neisseria Conference, Nov. 1998, Nice France.
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21. Pletveva, L, D.E. Shafer, G.A. Prince and R.J. Langley. Cloning, sequencing and expression of the cotton rat interleukin 1 alpha gene. *RSV Symposium*, Nov., Indian River, FL 1999.
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23. Fleuridor, R. A. **Lees** and L. Pirofski. A mimetic of glucuronoxylomannan (GXM) epitope elicits antibodies to GXM in mice. *Am Soc. Microbiol.* Los Angeles, Spring 2000.
24. Zhong, Z., Q. Chang, A. **Lees** and L. Pirofski. Human Anti-pneumococcal antibodies produced by XenoMouse mice prolong survival of mice with lethal pneumococcal infection. *Am Soc. Microbiol.* Los Angeles, Spring 2001.
25. Maitta, R.W., A. **Lees** and L. Pirofski. A monoclonal antibody from human immunoglobulin transgenic mice protects against *Cryptococcus neoformans* challenge. *IAAC*, 2003.
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30. KoKai-Kun, J, A. LopezAcosta, J. Acevedo and A. **Lees**. Lipoteichoic acid conjugate vaccine for staphylococcus. 8th Annual Conference on Vaccine Research. Baltimore, MD. May 2005.
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## **PATENTS ISSUED**

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