

REFERENCES

Abela, I. A., Reynell, L., and Trkola, A. (2010) Therapeutic Antibodies in HIV Treatment - Classical Approaches to Novel Advances. *Curr Pharm Design* 16, 3754-66

Adachi, A., Gendelman, H. E., Koenig, S., Folks, T., Willey, R., Rabson, A., and Martin, M. A. (1986) Production of acquired immunodeficiency syndrome-associated retrovirus in human and nonhuman cells transfected with an infectious molecular clone. *J Virol* 59, 284-291.

Altschul, S. F., Madden, T. L., Schäffer, A. A., Zhang, J., Zhang, Z., Miller, W., and Lipman, D. J. (1997) Gapped BLAST and PSI-BLAST: a new generation of protein database search programs. *Nucleic Acids Res* 25, 3389-02.

Arrivé, E., Newell, M.-L., Ekouevi, D. K., Chaix, M.-L., Thiebaut, R., Masquelier, B., Leroy, V., Perre, P. V. d., Rouzioux, C., and Dabis, F. (2007) Prevalence of resistance to nevirapine in mothers and children after single-dose exposure to prevent vertical transmission of HIV-1: a meta-analysis. *Int J Epidemiol* 36, 1009-21.

Ayres, M. D., Howard, S. C., Kuzio, J., Lopez-Ferber, M., and Possee, R. D. (1994) The Complete DNA Sequence of *Autographa californica* Nuclear Polyhedrosis Virus. *Virology* 202, 586-05.

Azzazy, H. M., and Highsmith, W. E., Jr. (2002) Phage display technology: clinical applications and recent innovations. *Clin Biochem* 35, 425-45.

Bagossi, P., Kádas, J., Miklóssy, G., Boross, P., Weber, I. T., and Tözsér, J. (2004) Development of a microtiter plate fluorescent assay for inhibition studies on the HTLV-1 and HIV-1 proteinases. *J Virol Methods* 119, 87-93.

Barbaro, G., and Iacobellis, G. (2009) Metabolic syndrome associated with HIV and highly active antiretroviral therapy. *Curr Diab Rep* 9, 37-42.

Barbas, C. F. r., Burton, D.R., Scott, J.K., Silverman, G.J. (2001) Phage display: a laboratory manual. Cold Spring Harbor Laboratory Press, NY.

Barderas, R., Desmet, J., Timmerman, P., Meloen, R., and Casal, J. I. (2008) Affinity maturation of antibodies assisted by in silico modeling. *Proc Natl Acad Sci U S A* 105, 9029-34.

Bardy, M., Gay, B., Pébernard, S., Chazal, N., Courcoul, M., Vigne, R., Decroly, E., and Boulanger, P. (2001) Interaction of human immunodeficiency virus type 1 Vif with Gag and Gag–Pol precursors: co-encapsidation and interference with viral protease-mediated Gag processing. *J Gen Virol* 82, 2719-33.

Belyakov, I. M., and Berzofsky, J. A. (2004) Immunobiology of Mucosal HIV Infection and the Basis for Development of a New Generation of Mucosal AIDS Vaccines. *Immunity* 20, 247-53.

Billich, S., Knoop, M. T., Hansen, J., Strop, P., Sedlacek, J., Mertz, R., and Moelling, K. (1988) Synthetic peptides as substrates and inhibitors of human immune deficiency virus-1 protease. *J Biol Chem* 263, 17905-8.

Blissard, G. W. (1996) Baculovirus-insect cell interactions. *Cytotechnology* 20, 73-93.

Blissard, G. W., and Rohrmann, G.F. (1990) Baculovirus diversity and molecular biology. *Ann Rev Entomol* 35, 127-55.

Blissard, G. W., and Wenz, J. R. (1992) Baculovirus gp64 envelope glycoprotein is sufficient to mediate pH-dependent membrane fusion. *J Virol* 66, 6829-35.

Boder E T, M. K. S., Wittrup K D, (2000) Directed evolution of antibody fragments with monovalent femtomolar antigen-binding affinity. *Proc Natl Acad Sci U S A* 97, 10701-5.

Bonning, B. C., Possee, R. D., and Hammock, B. D. (1999) Insecticidal Efficacy of a Recombinant Baculovirus Expressing JHE-KK, a Modified Juvenile Hormone Esterase. *J Invertebr Pathol* 73, 234-6.

Booth, C. L., and Geretti, A. M. (2007) Prevalence and determinants of transmitted antiretroviral drug resistance in HIV-1 infection. *J Antimicrob Chemother* 59, 1047-56.

Boublik, Y., Bonito, P. D., and Jones, I. M. (1995) Eukaryotic Virus Display: Engineering the Major Surface Glycoprotein of the *Autographa californica* Nuclear Polyhedrosis Virus (AcNPV) for the Presentation of Foreign Proteins on the Virus Surface. *Nat Biotech* 13, 1079-84.

Bradbury, A. R. M., Sidhu, S., Dubel, S., and McCafferty, J. (2011) Beyond natural antibodies: the power of in vitro display technologies. *Nat Biotech* 29, 245-54.

Braunagel, S. C., and Summers, M. D. (1994) *Autographa californica* Nuclear Polyhedrosis Virus, PDV, and ECV Viral Envelopes and Nucleocapsids: Structural Proteins, Antigens, Lipid and Fatty Acid Profiles. *Virology* 202, 315-28.

Brown, A. J. L., Lobidel, D., Wade, C. M., Rebus, S., Phillips, A. N., Brettle, R. P., France, A. J., Leen, C. S., McMenemy, J., McMillan, A., Maw, R. D., Mulcahy, F., Robertson, J. R., Sankar, K. N., Scott, G., Wyld, R., and Peutherer, J. F. (1997) The Molecular Epidemiology of Human Immunodeficiency Virus Type 1 in Six Cities in Britain and Ireland. *Virology* 235, 166-77.

Bühler, B., Lin, Y.-C., Morris, G., Olson, A. J., Wong, C.-H., Richman, D. D., Elder, J. H., and Torbett, B. E. (2001) Viral Evolution in Response to the Broad-Based Retroviral Protease Inhibitor TL-3. *J Virol* 75, 9502-8.

Bukrinsky, M. I., Haggerty, S., Dempsey, M. P., Sharova, N., Adzubei, A., Spitz, L., Lewis, P., Goldfarb, D., Emerman, M., and Stevenson, M. (1993) A nuclear localization signal within HIV-1 matrix protein that governs infection of non-dividing cells. *Nature* 365, 666-9.

Buseyne, F., Chaix, M. L., Fleury, B., Manigard, O., Burgard, M., Blanche, S., Rouzioux, C., and Rivièrè, Y. (1998) Cross-Clade-Specific Cytotoxic T Lymphocytes in HIV-1-Infected Children. *Virology* 250, 316-24.

Cane, P. A. (2009) New developments in HIV drug resistance. *J Antimicrob Chemother* 64, 37-40.

Carpentier, A., Patterson, B. W., Uffelman, K. D., Salit, I., and Lewis, G. F. (2005) Mechanism of highly active anti-retroviral therapy-induced hyperlipidemia in HIV-infected individuals. *Atherosclerosis* 178, 165-72.

- Case, D. A., Cheatham, T. E., Darden, T., Gohlke, H., Luo, R., Merz, K. M., Onufriev, A., Simmerling, C., Wang, B., and Woods, R. J. (2005) The Amber biomolecular simulation programs. *J Comput Chem* 26, 1668-88.
- Case DA, D. T., Cheatham III TE, Simmerling CL, Wang J, Duke RE, et al. (2006) AMBER9. University of California, San Francisco, CA.
- Cesareni, G. (1992) Peptide display on filamentous phage capsids. A new powerful tool to study protein-ligand interaction. *FEBS Lett* 307, 66-70.
- Chang, M. W., Ayeni, C., Breuer, S., and Torbett, B. E. Virtual Screening for HIV Protease Inhibitors: A Comparison of AutoDock 4 and Vina. *PLoS ONE* 5.
- Cheng, Y.-S. E., McGowan, M. H., Kettner, C. A., Schloss, J. V., Erickson-Viitanen, S., and Yin, F. H. (1990) High-level synthesis of recombinant HIV-1 protease and the recovery of active enzyme from inclusion bodies. *Gene* 87, 243-8.
- Chong, L. T., Duan, Y., Wang, L., Massova, I., and Kollman, P. A. (1999) Molecular dynamics and free-energy calculations applied to affinity maturation in antibody 48G7. *Proc Natl Acad Sci U S A* 96, 14330-5.
- Cicconi, P., Cozzi-Lepri, A., Castagna, A., Trescarichi, E. M., Antinori, A., Gatti, F., Cassola, G., Sighinolfi, L., Castelli, P., D'Arminio Monforte, A., and for the, I. F. S. G. (2010) Insights into reasons for discontinuation according to year of starting first regimen of highly active antiretroviral therapy in a cohort of antiretroviral-naïve patients. *HIV Medicine* 11, 104-13.
- Clark, L. A., Ganesan, S., Papp, S., and van Vlijmen, H. W. T. (2006) Trends in Antibody Sequence Changes during the Somatic Hypermutation Process. *J Immunol* 177, 333-40.

Clavel, F., and Hance, A. J. (2004). HIV Drug Resistance. *New Engl Med* 350, 1023-35.

Cloyd, M. W., and Moore, B. E. (1990) Spectrum of biological properties of human immunodeficiency virus (HIV-1) isolates. *Virology* 174, 103-16.

Conte, L. L., Chothia, C., and Janin, J. (1999) The atomic structure of protein-protein recognition sites. *J Mol Biol* 285, 2177-98.

Correia, B. E., Ban, Y.-E. A., Friend, D. J., Ellingson, K., Xu, H., Boni, E., Bradley-Hewitt, T., Bruhn-Johannsen, J. F., Stamatatos, L., Strong, R. K., and Schief, W. R. (2011) Computational Protein Design Using Flexible Backbone Remodeling and Resurfacing: Case Studies in Structure-Based Antigen Design. *J Mol Biol* 405, 284-97.

Cressey, R., Pimpa, S., Chewaskulyong, B., Lertprasertsuke, N., Saeteng, S., Tayapiwatana, C., and Kasinrerak, W. (2008) Simplified approaches for the development of an ELISA to detect circulating autoantibodies to p53 in cancer patients. *BMC Biotechnol* 8, 16.

D'Aquila, R., and Walker, B. (1999) Exploring the Benefits and Limits of Highly Active Antiretroviral Therapy. *JAMA* 282, 1668-9.

DaFonseca S, B. A., Coric P, Hong SS, Bouaziz S, Boulanger P. (2007) The 3-O-(3',3'-dimethylsuccinyl) derivative of betulinic acid (DSB) inhibits the assembly of virus-like particles in HIV-1 Gag precursor-expressing cells. *Antivir Ther* 12, 1185-203.

Darke, P. L., Leu, C. T., Davis, L. J., Heimbach, J. C., Diehl, R. E., Hill, W. S., Dixon, R. A., and Sigal, I. S. (1989) Human immunodeficiency virus protease. Bacterial expression and characterization of the purified aspartic protease. *J Biol Chem* 264, 2307-12.

Daugherty, P. S., Olsen, M. J., Iverson, B. L., and Georgiou, G. (1999) Development of an optimized expression system for the screening of antibody libraries displayed on the *Escherichia coli* surface. *Protein Eng* 12, 613-21.

Dautin, N., Karimova, G., Ullmann, A., and Ladant, D. (2000) Sensitive Genetic Screen for Protease Activity Based on a Cyclic AMP Signaling Cascade in *Escherichia coli*. *J Bacteriol* 182, 7060-6.

David, F. (2007) Antibody engineering and modification technologies. *Biomol Eng* 24, 201-15.

De Francesco, M. A., Baronio, M., Fiorentini, S., Signorini, C., Bonfanti, C., Poiesi, C., Popovic, M., Grassi, M., Garrafa, E., Bozzo, L., Lewis, G. K., Licenziati, S., Gallo, R. C., and Caruso, A. (2002) HIV-1 matrix protein p17 increases the production of proinflammatory cytokines and counteracts IL-4 activity by binding to a cellular receptor. *Proc Natl Acad Sci U S A* 99, 9972-7.

De Gier, J. W., and Luirink, J. (2001) Biogenesis of inner membrane proteins in *Escherichia coli*. *Mol Microbiol* 40, 314-22.

De Keyser, J., van der Does, C., and Driessen, A. J. (2003) The bacterial translocase: a dynamic protein channel complex. *Cell Mol Life Sci* 60, 2034-52.

Deng, L. W., Malik, P., and Perham, R. N. (1999) Interaction of the globular domains of pIII protein of filamentous bacteriophage fd with the F-pilus of *Escherichia coli*. *Virology* 253, 271-7.

Donald L, J. (2003) Developing baculovirus-insect cell expression systems for humanized recombinant glycoprotein production. *Virology* 310, 1-7.

Driessen, A. J., Fekkes, P., and van der Wolk, J. P. (1998) The Sec system. *Curr Opin Microbiol* 1, 216-22.

Du, Z.-M., Hu, C.-F., Shao, Q., Huang, M.-Y., Kou, C.-W., Zhu, X.-F., Zeng, Y.-X., and Shao, J.-Y. (2009) Upregulation of caveolin-1 and CD147 expression in nasopharyngeal carcinoma enhanced tumor cell migration and correlated with poor prognosis of the patients. *Int J Cancer* 125, 1832-41.

Duan, L., Bagasra, O., Laughlin, M. A., Oakes, J. W., and Pomerantz, R. J. (1994) Potent Inhibition of Human Immunodeficiency Virus Type 1 Replication by an Intracellular Anti-Rev Single-Chain Antibody. *Proc Natl Acad Sci U S A* 91, 5075-9.

Duisit, G., Saleun, S., Douthe, S., Barsoum, J., Chadeuf, G., and Moullier, P. (1999) Baculovirus vector requires electrostatic interactions including heparan sulfate for efficient gene transfer in mammalian cells. *J Gene Med* 1, 93-102.

Duvivier, C., Kolta, S., Assoumou, L., Ghosn, J., Rozenberg, S., Murphy, R. L., Katlama, C., Costagliola, D., and group, t. A. H. s. (2009) Greater decrease in bone mineral density with protease inhibitor regimens compared with nonnucleoside reverse transcriptase inhibitor regimens in HIV-1 infected naive patients. *AIDS* 27, 817-24.

Eric O, F. (1998) HIV-1 Gag Proteins: Diverse Functions in the Virus Life Cycle. *Virology* 251, 1-15.

Ernst, W., Schinko, T., Spenger, A., Oker-Blom, C., and Grabherr, R. (2006) Improving baculovirus transduction of mammalian cells by surface display of a RGD-motif. *J Biotech* 126, 237-40.

Fäcke, M., Janetzko, A., Shoeman, R. L., and Kräusslich, H. G. (1993) A large deletion in the matrix domain of the human immunodeficiency virus gag gene redirects virus particle assembly from the plasma membrane to the endoplasmic reticulum. *J Virol* 67, 4972-80.

Farady, C. J., Sellers, B. D., Jacobson, M. P., and Craik, C. S. (2009) Improving the species cross-reactivity of an antibody using computational design. *Bioorg A & Med Chem Letters* 19, 3744-7.

Fekkes, P., and Driessen, A. J. (1999) Protein targeting to the bacterial cytoplasmic membrane. *Microbiol Mol Biol Rev* 63, 161-73.

Fournout, S., Roquet, F., Salhi, S. L., Seyer, R., Valverde, V., Masson, J. M., Jouin, P., Pau, B., Nicolas, M., and Hanin, V. (1997) Development and Standardization of an Immuno-Quantified Solid Phase Assay for HIV-1 Aspartyl Protease Activity and Its Application to the Evaluation of Inhibitors. *Anal Chem* 69, 1746-52.

Friend, J., Parkin, N., Liegler, T., Martin, J. N., and Deeks, S. G. (2004) Isolated lopinavir resistance after virological rebound of a ritonavir/lopinavir-based regimen. *AIDS* 18, 1965-6.

Fulford, W., and Model, P. (1984) Gene X of bacteriophage f1 is required for phage DNA synthesis. Mutagenesis of in-frame overlapping genes. *J Mol Biol* 178, 137-53.

Fuse, T., Watanabe, K., Kitazato, K., and Kobayashi, N. (2006) Establishment of a new cell line inducibly expressing HIV-1 protease for performing safe and highly sensitive screening of HIV protease inhibitors. *Microb and Infect* 8, 1783-9.

Gailus, V., Ramsperger, U., Johner, C., Kramer, H., and Rasched, I. (1994) The role of the adsorption complex in the termination of filamentous phage assembly. *Res Microbiol* 145, 699-709.

Ghosh, A. K., Chapsal, B. D., Weber, I. T., and Mitsuya, H. (2007) Design of HIV Protease Inhibitors Targeting Protein Backbone: An Effective Strategy for Combating Drug Resistance. *Acc Cheml Res* 41, 78-86.

Ghosh, S., Parvez, M. K., Banerjee, K., Sarin, S. K., and Hasnain, S. E. (2002) Baculovirus as Mammalian Cell Expression Vector for Gene Therapy: An Emerging Strategy. *Mol Ther* 6, 5-11.

Gibney, G., and Baxevanis, A. D. (2001) Searching NCBI Databases Using Entrez. *Curr Protocols Hum Gene*. John Wiley & Sons, Inc.

Gohlke, H., Kiel, C., and Case, D. A. (2003) Insights into Protein-Protein Binding by Binding Free Energy Calculation and Free Energy Decomposition for the Ras-Raf and Ras-RalGDS Complexes. *J Mol Biol* 330, 891-913.

Goobar, L., Danielson, U. H., Brodin, P., Grundström, T., Öberg, B., and Norrby, E. (1991) High-yield purification of HIV-1 proteinase expressed by a synthetic gene in *Escherichia coli*. *Protein Express Purif* 2, 15-23.

Goodrich, A. F., and Steege, D. A. (1999) Roles of polyadenylation and nucleolytic cleavage in the filamentous phage mRNA processing and decay pathways in *Escherichia coli*. *RNA* 5, 972-85.

Gou, X., Ru, Q., Zhang, H., Chen, Y., Li, L., Yang, H., Xing, J., and Chen, Z. (2009) HAb18G/CD147 inhibits starvation-induced autophagy in human hepatoma cell SMMC7721 with an involvement of Beclin 1 down-regulation. *Cancer Science* 100, 837-43.

Grabherr, R., Ernst, W., Oker-Blom, C., and Jones, I. (2001) Developments in the use of baculoviruses for the surface display of complex eukaryotic proteins. *Trends Biotechnol* 19, 231-6.

Grabherr R, E. W., Doblhoff-Dier O, Sara M, Katinger H. (1997) Expression of foreign proteins on the surface of *Autographa californica* nuclear polyhedrosis virus. *Biotechniques* 22, 730-5.

Granio, O., Porcherot, M., Corjon, S., Kitidee, K., Henning, P., Eljaafari, A., Cimorelli, A., Lindholm, L., Miossec, P., Boulanger, P., and Hong, S.-S. (2009) Improved Adenovirus Type 5 Vector-Mediated Transduction of Resistant Cells by Piggybacking on Coxsackie B-Adenovirus Receptor-Pseudotyped Baculovirus. *J Virol* 83, 6048-66.

Gu, X., Jia, X., Feng, J., Shen, B., Huang, Y., Geng, S., Sun, Y., Wang, Y., Li, Y., and Long, M. (2010) Molecular Modeling and Affinity Determination of scFv Antibody: Proper Linker Peptide Enhances Its Activity. *Ann Biomed Eng* 38, 537-49.

Hammer, S. M., Saag, M. S., Schechter, M., Montaner, J. S. G., Schooley, R. T., Jacobsen, D. M., Thompson, M. A., Carpenter, C. C. J., Fischl, M. A., Gazzard, B. G., Gatell, J. M., Hirsch, M. S., Katzenstein, D. A., Richman, D. D., Vella, S., Yeni, P. G., and Volberding, P. A. (2006) Treatment for Adult HIV Infection. *JAMA* 296, 827-43.

Han, Z.-d., Bi, X.-c., Qin, W.-j., He, H.-c., Dai, Q.-s., Zou, J., Ye, Y.-k., Liang, Y.-x., Zeng, G.-h., Chen, Z.-n., and Zhong, W.-d. (2009) CD147 Expression Indicates Unfavourable Prognosis in Prostate Cancer. *POR* 15, 369-74.

Hearps, A. C., and Jans, D. A. (2007) Regulating the functions of the HIV-1 matrix protein. *AIDS Res Hum Retroviruses* 23, 341-6.

Hefferon, K. L., Oomens, A. G. P., Monsma, S. A., Finnerty, C. M., and Blissard, G. W. (1999) Host Cell Receptor Binding by Baculovirus GP64 and Kinetics of Virion Entry. *Virology* 258, 455-68.

Hill, C. P., Worthylake, D., Bancroft, D.P., Christensen, A. M., and Sundquist, W. I. (1996) Crstal structure of the HIV-1 matrix protein: implications for viral architecture and assembly. *Proc Natl Acsd Sci U S A* 93.

Hoet, R. M., Cohen, E. H., Kent, R. B., Rookey, K., Schoonbroodt, S., Hogan, S., Rem, L., Frans, N., Daukandt, M., Pieters, H., van Hegelsom, R., Neer, N. C.-v., Natri, H. G., Rondon, I. J., Leeds, J. A., Hufton, S. E., Huang, L., Kashin, I., Devlin, M., Kuang, G., Steukers, M., Viswanathan, M., Nixon, A. E., Sexton, D. J., Hoogenboom, H. R., and Ladner, R. C. (2005) Generation of high-affinity human antibodies by combining donor-derived and synthetic complementarity-determining-region diversity. *Nat Biotech* 23, 344-8.

Hofmann, C., Sandig, V., Jennings, G., Rudolph, M., Schlag, P., and Strauss, M. (1995) Efficient gene transfer into human hepatocytes by baculovirus vectors. *Proc Natl Acad Sci U S A* 92, 10099-103.

Honegger, A., Spinelli, S., Cambillau, C., and Pluckthun, A. (2005) A mutation designed to alter crystal packing permits structural analysis of a tight-binding fluorescein-scFv complex. *Prot Sci* 14, 2537-49.

Hoogenboom, H. R., de Bruïne, A. P., Hufton, S. E., Hoet, R. M., Arends, J.-W., and Roovers, R. C. (1998) Antibody phage display technology and its applications. *Immunotechnology* 4, 1-20.

Hou, T., Zhang, W., Case, D. A., and Wang, W. (2008) Characterization of Domain–Peptide Interaction Interface: A Case Study on the Amphiphysin-1 SH3 Domain. *J Mol Biol* 376, 1201-14.

Hu, G., Zhang, Q., and Chen, L. (2011) Insights into scFv:drug binding using the molecular dynamics simulation and free energy calculation. *J Mol Model* 17, 1919-26.

Hu, Y.-C., Tsai, C.-T., Chang, Y.-J., and Huang, J.-H. (2003) Enhancement and Prolongation of Baculovirus-Mediated Expression in Mammalian Cells: Focuses on Strategic Infection and Feeding. *Biotechnoogyl Progress* 19, 373-9.

Huber, M., Olson, W. C., and Trkola, A. (2008) Antibodies for HIV Treatment and Prevention: Window of Opportunity?

Human Antibody Therapeutics for Viral Disease (S. K. Dessain, Ed.), Vol. 317, 39-66. Springer Berlin Heidelberg.

Huber, M., and Trkola, A. (2007) Humoral immunity to HIV-1: neutralization and beyond. *J Int Med* 262, 5-25.

Hurst, M., and Faulds, D. (2000) Lopinavir. *Drugs* 60, 1371-9.

Huynh, C. Q., and Zieler, H. (1999) Construction of modular and versatile plasmid vectors for the high-level expression of single or multiple genes in insects and insect cell lines. *J Mol Biol* 288, 13-20.

Intasai, N., Tragoolpua, K., Pingmuang, P., Khunkaewla, P., Moonsom, S., Kasinrer, W., Lieber, A., and Tayapiwatana, C. (2009) Potent inhibition of OKT3-induced T cell proliferation and suppression of CD147 cell surface expression in HeLa cells by scFv-M6-1B9. *Immunobiology* 214, 410-21.

Jarvis, D. L., Wills, L., Burow, G., and Bohlmeier, D. A. (1998) Mutational Analysis of the N-Linked Glycans on *Autographa californica* Nucleopolyhedrovirus gp64. *J Virol* 72, 9459-69.

Jiménez, J. L., Resino, S., Martínez-Colom, A., Bellón, J. M., Ángeles Muñoz-Fernández, M., and on behalf of the Spanish Group of Paediatric, H. I. V. I. (2005) Mutations at codons 54 and 82 of HIV protease predict virological response of HIV-infected children on salvage lopinavir/ritonavir therapy. *J Antimicrob Chemother* 56, 1081-6.

Johnson, V. A., Brun-Vezinet, F., Clotet, B., Gunthard, H. F., Kuritzkes, D. R., Pillay, D., Schapiro, J. M., and Richman, D. D. (2008) Update of Drug Resistance Mutations in HIV-1. *Top HIV Med.* 16, 62-8.

Kabat, E. A., National Institutes of Health, and Columbia, U. (1991) Sequences of proteins of immunological interest. U.S. Dept. of Health and Human Services, Public Health Service, National Institutes of Health, Bethesda, MD.

Kamei, H., Shimazaki, K., and Nishi, Y. (2001) Computational 3-D modeling and site-directed mutation of an antibody that binds Neu2en5Ac, a transition state analogue of a sialic acid. *Proteins* 45, 285-96.

Kang, W., Crook, N., Winstanley, D., and O'Reilly, D. (1997) Complete Sequence and Transposon Mutagenesis of the BamHI J Fragment of *Cydia pomonella* Granulosis Virus. *Virus Genes* 14, 131-6.

Kang, W. K., Imai, N., Suzuki, M., Iwanaga, M., Matsumoto, S., and Zemskov, E. A. (2003) Interaction of *Bombyx mori* nucleopolyhedrovirus BRO-A and host cell protein laminin. *Arch Virol* 148, 99-113.

Karlsson, F., Borrebaeck, C. A., Nilsson, N., and Malmberg-Hager, A. C. (2003) The mechanism of bacterial infection by filamentous phages involves molecular interactions between TolA and phage protein 3 domains. *J Bacteriol* 185, 2628-34.

Kaufmann, M., Lindner, P., Honegger, A., Blank, K., Tschopp, M., Capitani, G., Plückthun, A., and Grütter, M. G. (2002) Crystal Structure of the Anti-His Tag Antibody 3D5 Single-chain Fragment Complexed to its Antigen. *J Mol Biol* 318, 135-47.

Kempf, D. J., Isaacson, J. D., King, M. S., Brun, S. C., Xu, Y., Real, K., Bernstein, B. M., Japour, A. J., Sun, E., and Rode, R. A. (2001) Identification of Genotypic Changes in Human Immunodeficiency Virus Protease That Correlate with Reduced Susceptibility to the Protease Inhibitor Lopinavir among Viral Isolates from Protease Inhibitor-Experienced Patients. *J Virol* 75, 7462-9.

Kempf, D. J., Marsh, K. C., Fino, L. C., Bryant, P., Craig-Kennard, A., Sham, H. L., Zhao, C., Vasavanonda, S., Kohlbrenner, W. E., Wideburg, N. E., Saldivar, A., Green, B. E., Herrin, T., and Norbeck, D. W. (1994) Design of orally bioavailable, symmetry-based inhibitors of HIV protease. *Bioorg A & Med Chem* 2, 847-58.

Kenoutis, C., Efröse, R. C., Swevers, L., Lavdas, A. A., Gaitanou, M., Matsas, R., and Iatrou, K. (2006) Baculovirus-Mediated Gene Delivery into Mammalian Cells Does Not Alter Their Transcriptional and Differentiating Potential but Is Accompanied by Early Viral Gene Expression. *J Virol* 80, 4135-46.

Kipriyanov, S. M., Moldenhauer, G., Martin, A. C., Kupriyanova, O. A., and Little, M. (1997) Two amino acid mutations in an anti-human CD3 single chain Fv antibody fragment that affect the yield on bacterial secretion, but not the affinity. *Protein Eng* 10, 445-53.

Kirsch, M., Zaman, M., Meier, D., Dübel, S., and Hust, M. (2005) Parameters affecting the display of antibodies on phage. *J Immunol Methods* 301, 173-85.

Kitchen, D. B., Decornez, H., Furr, J. R., and Bajorath, J. (2004) Docking and scoring in virtual screening for drug discovery: methods and applications. *Nat Rev Drug Discov* 3, 935-49.

Kitidee, K., Nangola, S., Gonzalez, G., Boulanger, P., Tayapiwatana, C., and Hong, S.-S. (2010) Baculovirus display of single chain antibody (scFv) using a novel signal peptide. *BMC Biotechnol* 10, 80.

Kohl, N. E., Emini, E. A., Schleif, W. A., Davis, L. J., Heimbach, J. C., Dixon, R. A., Scolnick, E. M., and Sigal, I. S. (1988) Active human immunodeficiency virus protease is required for viral infectivity. *Proc Natl Acad Sci U S A* 85, 4686-90.

Kokoska, R. J., and Steege, D. A. (1998) Appropriate Expression of Filamentous Phage f1 DNA Replication Genes II and X Requires RNase E-Dependent Processing and Separate mRNAs. *J Bacteriol* 180, 3245-9.

Kollman, P., Massova, I., Reyes, C., Kuhn, B., Huo, S., Chong, L., Lee, M., Lee, T., Duan, Y., Wang, W., Donini, O., Cieplak, P., Srinivasan, J., Case, D., and Cheatham, T. (2000) Calculating Structures and Free Energies of Complex Molecules: Combining Molecular Mechanics and Continuum Models. *Acc Chem Res* 33, 889-97.

Kontermann, R. E. (2004) Intrabodies as therapeutic agents. *Methods* 34, 163-70.

Kost, T. A., Condreay, J. P., and Jarvis, D. L. (2005) Baculovirus as versatile vectors for protein expression in insect and mammalian cells. *Nat Biotech* 23, 567-75.

Kožíšek, M., Šašková, K. G., Řezáčová, P., Brynda, J., van Maarseveen, N. M., De Jong, D., Boucher, C. A., Kagan, R. M., Nijhuis, M., and Konvalinka, J. (2008) Ninety-Nine Is Not Enough: Molecular Characterization of Inhibitor-Resistant Human Immunodeficiency Virus Type 1 Protease Mutants with Insertions in the Flap Region. *J Virol* 82, 5869-78.

Kramer, R., Schaber, M., Skalka, A., Ganguly, K., Wong-Staal, F., and Reddy, E. (1986) HTLV-III gag protein is processed in yeast cells by the virus pol-protease. *Science* 231, 1580-4.

Krausslich, H. G. (1992) Specific inhibitor of human immunodeficiency virus proteinase prevents the cytotoxic effects of a single-chain proteinase dimer and restores particle formation. *J. Virol* 66, 567-72.

Kräusslich, H. G., Fäcke, M., Heuser, A. M., Konvalinka, J., and Zentgraf, H. (1995) The spacer peptide between human immunodeficiency virus capsid and nucleocapsid proteins is essential for ordered assembly and viral infectivity. *J Virol* 69, 3407-19.

Kulakosky, P., Shuler, M., and Wood, H. (1998) N-glycosylation of a baculovirus-expressed recombinant glycoprotein in three insect cell lines. *In Vitro Cell Dev Biol- Animal* 34, 101-8.

Lazzaroni, J. C., Germon, P., Ray, M. C., and Vianney, A. (1999) The Tol proteins of *Escherichia coli* and their involvement in the uptake of biomolecules and outer membrane stability. *FEMS Microbiol Lett* 177, 191-7.

Lengauer, T., and Rarey, M. (1996) Computational methods for biomolecular docking. *Curr Opin Struct Biol* 6, 402-6.

Levin, R., Mhashilkar, A. M., Dorfman, T., Bukovsky, A., Zani, C., Bagley, J., Hinkula, J., Niedrig, M., Albert, J., Wahren, B., Gottlinger, H. G., and Marasco, W. A. (1997) Inhibition of early and late events of the HIV-1 replication cycle by cytoplasmic Fab intrabodies against the matrix protein, p17. *Mol Med* 3, 96-110.

Levy-Mintz, P., Duan, L., Zhang, H., Hu, B., Dornadula, G., Zhu, M., Kulkosky, J., Bizub-Bender, D., Skalka, A. M., and Pomerantz, R. J. (1996) Intracellular expression of single-chain variable fragments to inhibit early stages of the viral life cycle by targeting human immunodeficiency virus type 1 integrase. *J Virol* 70, 8821-32.

Lin, Z. (2008) *Bioinformatics Basics: Applications in Biological Science and Medicine*. Edited by Lukas K. Buehler and Hooman H. Rashidi. *Briefings in Bioinformatics* 9, 256-7.

Lobato, M. N., and Rabbitts, T. H. (2003) Intracellular antibodies and challenges facing their use as therapeutic agents. *Trends Mol Med* 9, 390-6.

Loisel, T. P., Ansanay, H., St-Onge, S., Gay, B., Boulanger, P., Strosberg, A. D., Marullo, S., and Bouvier, M. (1997) Recovery of homogeneous and functional [beta]2-adrenergic receptors from extracellular baculovirus particles. *Nat Biotech* 15, 1300-4.

Lowman, H. B. (1997) Bacteriophage display and discovery of peptide leads for drug development. *Ann Rev Biophys Biomol Struct* 26 401-24.

Loy E, V. (1997) Nucleopolyhedrovirus Interactions with Their Insect Hosts. *Acad Press* 48, 313-48

Mäkelä, A. R., Matilainen, H., White, D. J., Ruoslahti, E., and Oker-Blom, C. (2006) Enhanced Baculovirus-Mediated Transduction of Human Cancer Cells by Tumor-Homing Peptides. *J Virol* 80, 6603-11.

Mäkelä, A. R., and Oker - Blom, C. (2006) Baculovirus Display: A Multifunctional Technology for Gene Delivery and Eukaryotic Library Development. *Acad Press* 68, 91-112.

Malik, A., Firoz, A., Jha, V., Sunderasan, E., and Ahmad, S. (2010) Modeling the three-dimensional structures of an unbound single-chain variable fragment (scFv) and its hypothetical complex with a *Corynespora cassiicola* toxin, cassiicolin. *J Mol Model* 16, 1883-93.

Mallewa, J. E., Wilkins, E., Vilar, J., Mallewa, M., Doran, D., Back, D., and Pirmohamed, M. (2008) HIV-associated lipodystrophy: a review of underlying mechanisms and therapeutic options. *J Antimicrob Chemother* 62, 648-60.

- Marasco, W. A., Haseltine, W. A., and Chen, S. (1993) Design, Intracellular Expression, and Activity of a Human Anti-Human Immunodeficiency Virus Type 1 gp120 Single-Chain Antibody. *Proc Natl Acad Sci U S A* 90, 7889-93.
- Marks, J. D., Hoogenboom, H. R., Bonnert, T. P., McCafferty, J., Griffiths, A. D., and Winter, G. (1991) By-passing immunization: Human antibodies from V-gene libraries displayed on phage. *J Mol Biol* 222, 581-97.
- Marvin, J. S., and Zhu, Z. (2005) Computation-Based Design and Engineering of Protein and Antibody Therapeutics. *Drug Des Rev On* 2, 419-25.
- Masquelier, B., Breilh, D., Neau, D., Lawson-Ayayi, S., Lavignolle, V., Ragnaud, J.-M., Dupon, M., Morlat, P., Dabis, F., Fleury, H., and Aquitaine, t. G. d. E. C. d. S. e. (2002) Human Immunodeficiency Virus Type 1 Genotypic and Pharmacokinetic Determinants of the Virological Response to Lopinavir-Ritonavir-Containing Therapy in Protease Inhibitor-Experienced Patients. *Antimicrob Agents Chemother* 46, 2926-32.
- Maynard, J., and Georgiou, G. (2000) ANTIBODY ENGINEERING. *Ann Rev Biomed Eng* 2, 339-76.
- Mergulhao, F. J., Summers, D. K., and Monteiro, G. A. (2005) Recombinant protein secretion in *Escherichia coli*. *Biotechnol Adv* 23, 177-202.
- Mergulhão, F. J. M., Summers, D. K., and Monteiro, G. A. (2005) Recombinant protein secretion in *Escherichia coli*. *Biotechnology Advances* 23, 177-202.

Mo, H., King, M. S., King, K., Molla, A., Brun, S., and Kempf, D. J. (2005) Selection of Resistance in Protease Inhibitor-Experienced, Human Immunodeficiency Virus Type 1-Infected Subjects Failing Lopinavir- and Ritonavir-Based Therapy: Mutation Patterns and Baseline Correlates. *J Virol* 79, 3329-38.

Molla, A., Korneyeva, M., Gao, Q., Vasavanonda, S., Schipper, P. J., Mo, H.-M., Markowitz, M., Chernyavskiy, T., Niu, P., Lyons, N., Hsu, A., Granneman, G. R., Ho, D. D., Boucher, C. A. B., Leonard, J. M., Norbeck, D. W., and Kempf, D. J. (1996) Ordered accumulation of mutations in HIV protease confers resistance to ritonavir. *Nat Med* 2, 760-6.

Monsma, S. A., and Blissard, G. W. (1995) Identification of a membrane fusion domain and an oligomerization domain in the baculovirus GP64 envelope fusion protein. *J Virol* 69, 2583-95.

Monsma, S. A., Oomens, A. G., and Blissard, G. W. (1996) The GP64 envelope fusion protein is an essential baculovirus protein required for cell-to-cell transmission of infection. *J Virol* 70, 4607-16.

Mori, H., and Ito, K. (2001) The Sec protein-translocation pathway. *Trends Microb* 9, 494-500.

Morikawa, Y., Goto, T., and Sano, K. (1999) In Vitro Assembly of Human Immunodeficiency Virus Type 1 Gag Protein. *J Biol Chem* 274, 27997-8002.

Morris, G. M., Goodsell, D. S., Halliday, R. S., Huey, R., Hart, W. E., Belew, R. K., and Olson, A. J. (1998) Automated docking using a Lamarckian genetic algorithm and an empirical binding free energy function. *J Comput Chem* 19, 1639-62.

Mottershead, D., van der Linden, I., Bonsdorff, C.-H. v., Keinänen, K., and Oker-Blom, C. (1997) Baculoviral Display of the Green Fluorescent Protein and Rubella Virus Envelope Proteins. *Biochem Biophys Res Commun* 238, 717-22.

Mottershead, D. G., Alfthan, K., Ojala, K., Takkinen, K., and Oker-Blom, C. (2000) Baculoviral Display of Functional scFv and Synthetic IgG-Binding Domains. *Biochem Biophys Res Commun* 275, 84-90.

Moyle, G. J., and Back, D. (2001) Principles and practice of HIV-protease inhibitor pharmacoenhancement. *HIV Medicine* 2, 105-113.

Muegge, I. (2005) PMF Scoring Revisited. *J Med Chem* 49, 5895-902.

Mullen, L. M., Nair, S. P., Ward, J. M., Rycroft, A. N., and Henderson, B. (2006) Phage display in the study of infectious diseases. *Trends Microbiol* 14, 141-7.

Nagai, H., Wada, K., Morishita, T., Utsumi, M., Nishiyama, Y., and Kaneda, T. (2005) New estimation method for highly sensitive quantitation of human immunodeficiency virus type 1 DNA and its application. *J Virol Methods* 124, 157-65.

Navia, M. A., Fitzgerald, P. M. D., McKeever, B. M., Leu, C.-T., Heimbach, J. C.,

Herber, W. K., Sigal, I. S., Darke, P. L., and Springer, J. P. (1989) Three-dimensional structure of aspartyl protease from human immunodeficiency virus HIV-1. *Nature* 337, 615-620.

Naylor, P. H., Naylor, C. W., Badamchian, M., Wada, S., Goldstein, A. L., Wang, S. S., Sun, D. K., Thornton, A. H., and Sarin, P. S. (1987) Human immunodeficiency virus contains an epitope immunoreactive with thymosin alpha 1 and the 30-amino acid synthetic p17 group-specific antigen peptide HGP-30. *Proc Natl Acad Sci U S A* 84, 2951-5.

O'Reilly, D. R., Miller, L.K., and Luckow, V.A. (1994) *Baculovirus Expression Vectors: A Laboratory Manual*. Oxford University Press, New York.

Odegrip, R., Coomber, D., Eldridge, B., Hederer, R., Kuhlman, P. A., Ullman, C., FitzGerald, K., and McGregor, D. (2004) CIS display: In vitro selection of peptides from libraries of protein–DNA complexes. *Proc Natl Acad Sci U S A* 101, 2806-10.

Ojala, K., Koski, J., Ernst, W., Grabherr, R., Jones, I., and Oker-Blom, C. (2004) Improved display of synthetic IgG-binding domains on the baculovirus surface. *Technol Cancer Res treat* 3, 77-84

Ojala, K., Mottershead, D. G., Suokko, A., and Oker-Blom, C. (2001) Specific Binding of Baculoviruses Displaying gp64 Fusion Proteins to Mammalian Cells. *Biochem Biophys Res Commun* 284, 777-84.

Oker-Blom, C., Airenne, K. J., and Grabherr, R. (2003) Baculovirus display strategies: Emerging tools for eukaryotic libraries and gene delivery. *Brief Funct Genomic Proteomic* 2, 244-53.

Oomens, A. G. P., and Blissard, G. W. (1999) Requirement for GP64 to Drive Efficient Budding of *Autographa californica* Multicapsid Nucleopolyhedrovirus. *Virology* 254, 297-314.

Paborsky, L. R., Dunn, K. E., Gibbs, C. S., and Dougherty, J. P. (1996) A nickel chelate microtiter plate assay for six histidine-containing proteins. *Anal Biochem* 234, 60 - 65.

Papsidero, L. D., Sheu, M., and Ruscetti, F. W. (1989) Human immunodeficiency virus type 1-neutralizing monoclonal antibodies which react with p17 core protein: characterization and epitope mapping. *J Virol* 63, 267-72.

Parren, P. W. H. I., and Burton, D. R. (2001). The antiviral activity of antibodies in vitro and in vivo. *Adv Immunol* 77, 195-262.

Pearl, L. H., and Taylor, W. R. (1987) A structural model for the retroviral proteases. *Nature* 329, 351-4.

Peden, K., Emerman, M., and Montagnier, L. (1991) Changes in growth properties on passage in tissue culture of viruses derived from infectious molecular clones of HIV-1LAI, HIV-1MAL, and HIV-1ELI. *Virology* 185, 661-72.

Peipp, M., Saul, D., Barbin, K., Bruenke, J., Zunino, S. J., Niederweis, M., and Fey, G. H. (2004). Efficient eukaryotic expression of fluorescent scFv fusion proteins directed against CD antigens for FACS applications. *J Immunol Methods* 285, 265-80.

Pokorná, J., Machala, L., Řezáčová, P., and Konvalinka, J. (2009) Current and Novel Inhibitors of HIV Protease. *Viruses* 1, 1209-39.

Qazi, N. A., Pozniak, A. L., and Morlese, J. F. (2002) Lopinavir/ritonavir (ABT-378/r). *Expert Opin Pharmacother* 3, 315-27.

Rachel, J., Lisa, G., Carole, C., and Chris, H. (2002) Systematic review and meta-analysis of evidence for increasing numbers of drugs in antiretroviral combination therapy. *BMJ* 324.

Rizzo, C. J., Korant, B. D., and Lawrence C. Kuo, J. A. S. (1994) Genetic approaches designed to minimize cytotoxicity of retroviral protease. *Meth Enzymol.* 241, 16-29.

Robert-Hebmann, V., Emiliani, S., Jean, F., Resnicoff, M., Traincard, F., and Devaux, C. (1992) Clonal analysis of murine b cell response to the human immunodeficiency virus type 1 (HIV1)-gag p17 and p25 antigens. *Mol Immunol* 29, 729-38.

Roberts, N., Martin, J., Kinchington, D., Broadhurst, A., Craig, J., Duncan, I., Galpin, S., Handa, B., Kay, J., Krohn, A., and al., e. (1990) Rational design of peptide-based HIV proteinase inhibitors. *Science* 248, 358-61.

Royer, M., Bardy, M., Gay, B., Tournier, J., and Boulanger, P. (1997) Proteolytic activity in vivo and encapsidation of recombinant human immunodeficiency virus type 1 proteinase expressed in baculovirus-infected cells. *J Gen Virol* 78, 131-42.

Sanchez-Merino, V., Nie, S., and Luzuriaga, K. (2005) HIV-1-Specific CD8+ T Cell Responses and Viral Evolution in Women and Infants. *J Immunol* 175, 6976-

Sandee, D., Tungpradabkul, S., Kurokawa, Y., Fukui, K., and Takagi, M. (2005) Combination of Dsb coexpression and an addition of sorbitol markedly enhanced soluble expression of single-chain Fv in *Escherichia coli*. *Biotechnol Bioeng* 91, 418-24.

Sangma, C., Chuakheaw, D., Jongkon, N., Saenbandit, K., Nunrium, P., Uthayopas, P., and Hannongbua, S. (2005) Virtual screening for anti-HIV-1 RT and anti-HIV-1 PR inhibitors from the Thai medicinal plants database: a combined docking with neural networks approach. *Comb Chem Throughput Screen* 8, 417-29.

Šašková, K. G., Kožíšek, M., Lepšík, M., Brynda, J., Řezáčová, P., Václavíková, J., Kagan, R. M., Machala, L., and Konvalinka, J. (2008) Enzymatic and structural analysis of the I47A mutation contributing to the reduced susceptibility to HIV protease inhibitor lopinavir. *Protein Sci* 17, 1555-64.

Saurya S, L. Z., Karpas A. (2002). Characterization of nef Gene of HIV Type 1 in Highly Active Antiretroviral Therapy Treated AIDS Patients with Discordance between Viral Load and CD4+ T Cell Counts. *AIDS Res Hum Retroviruses* 18, 983-7.

Sblattero, D., and Bradbury, A. (2000) Exploiting recombination in single bacteria to make large phage antibody libraries. *Nat Biotech* 18, 75-80.

Schrama, D., Reisfeld, R. A., and Becker, J. C. (2006) Antibody targeted drugs as cancer therapeutics. *Nat Rev Drug Discov* 5, 147-59.

Schwede, T., Kopp, J., Guex, N., and Peitsch, M. C. (2003) SWISS-MODEL: an automated protein homology-modeling server. *Nucleic Acids Res* 31, 3381-5.

Sepp, A., Tawfik, D. S., and Griffiths, A. D. (2002) Microbead display by in vitro compartmentalisation: selection for binding using flow cytometry. *FEBS Letters* 532, 455-8.

Sham, H. L., Kempf, D. J., Molla, A., Marsh, K. C., Kumar, G. N., Chen, C.-M., Kati, W., Stewart, K., Lal, R., Hsu, A., Betebenner, D., Korneyeva, M., Vasavanonda, S., McDonald, E., Saldivar, A., Wideburg, N., Chen, X., Niu, P., Park, C., Jayanti, V., Grabowski, B., Granneman, G. R., Sun, E., Japour, A. J., Leonard, J. M., Plattner, J. J., and Norbeck, D. W. (1998) ABT-378, a Highly Potent Inhibitor of the Human Immunodeficiency Virus Protease. *Antimicrob Agents Chemother* 42, 3218-24.

Shibata, R., Hoggan, M. D., Broscius, C., Englund, G., Theodore, T. S., Buckler-White, A., Arthur, L. O., Israel, Z., Schultz, A., and Lane, H. C. (1995) Isolation and characterization of a syncytium-inducing, macrophage/T-cell line-tropic human immunodeficiency virus type 1 isolate that readily infects chimpanzee cells in vitro and in vivo. *J Virol* 69, 4453-62.

Shoichet, B. K. (2004) Virtual screening of chemical libraries. *Nature* 432, 862-5.

Sidhu, S. S. (2000) Phage display in pharmaceutical biotechnology. *Curr Opin Biotechnol* 11, 610-6.

Sidhu, S. S. (2001) Engineering M13 for phage display. *Biomol Eng* 18, 57-63.

Slack, J., and Arif, B. M. (2006) The Baculoviruses Occlusion - Derived Virus: Virion Structure and Function. *Academic Press* 69, 99-165.

Spearman, P., Wang, J. J., Vander Heyden, N., and Ratner, L. (1994) Identification of human immunodeficiency virus type 1 Gag protein domains essential to membrane binding and particle assembly. *J Virol* 68, 3232-42.

Stebbins, J., and Debouck, C. (1997) A microtiter colorimetric assay for the HIV-1 protease. *Anal Biochem* 248, 246-50.

Stebbins, J., Debouck, C., and Lawrence C. Kuo, J. A. S. (1994) Expression systems for retroviral proteases. *Meth. Enzymol.* 241, 3-16.

Steindl, T. M., Schuster, D., Laggner, C., Chuang, K., Hoffmann, R. D., and Langer, T. (2007) Parallel Screening and Activity Profiling with HIV Protease Inhibitor Pharmacophore Models. *J Chem Info Model* 47, 563-71.

Stiegler, G., and Katinger, H. (2003) Therapeutic potential of neutralizing antibodies in the treatment of HIV-1 infection. *J Antimicrob Chemother* 51, 757-9.

Stoll, V., Qin, W., Stewart, K. D., Jakob, C., Park, C., Walter, K., Simmer, R. L., Helfrich, R., Bussiere, D., Kao, J., Kempf, D., Sham, H. L., and Norbeck, D. W. (2002) X-ray crystallographic structure of ABT-378 (Lopinavir) bound to HIV-1 protease. *Bioor Ac & Med Chem* 10, 2803-6.

Tan, H., Ye, K., Wang, Z., and Tang, H. (2008) CD147 expression as a significant prognostic factor in differentiated thyroid carcinoma. *Translational Research* 152, 143-9.

Tanford, C. (1978) The hydrophobic effect and the organization of living matter. *Science* 200, 1012-8.

Tewari, D., Goldstein, S. L., Notkins, A. L., and Zhou, P. (1998) cDNA Encoding a Single-Chain Antibody to HIV p17 with Cytoplasmic or Nuclear Retention Signals Inhibits HIV-1 Replication. *J Immunol* 161, 2642-7.

Tewari, D., Notkins, A. L., and Zhou, P. (2003) Inhibition of HIV-1 replication in primary human T cells transduced with an intracellular anti-HIV-1 p17 antibody gene. *J Gene Med* 5, 182-9.

Thompson, M. A., Aberg, J. A., Cahn, P., Montaner, J. S. G., Rizzardini, G., Telenti, A., Gatell, J. M., Günthard, H. F., Hammer, S. M., Hirsch, M. S., Jacobsen, D. M., Reiss, P., Richman, D. D., Volberding, P. A., Yeni, P., and Schooley, R. T. (2010) Antiretroviral Treatment of Adult HIV Infection. *JAMA* 304, 321-33.

Torbeev, V. Y., Raghuraman, H., Hamelberg, D., Tonelli, M., Westler, W. M., Perozo, E., and Kent, S. B. H. (2011) Protein conformational dynamics in the mechanism of HIV-1 protease catalysis. *Proc Natl Acad Sci* 10.

Tragoopua, K., Intasai, N., Kasinrerak, W., Mai, S., Yuan, Y., and Tayapiwatana, C. (2008) Generation of functional scFv intrabody to abate the expression of CD147 surface molecule of 293A cells. *BMC Biotechnology* 8, 5.

Ugolini, S., Mondor, I., Parren, P. W., Burton, D. R., Tilley, S. A., Klasse, P. J., and Sattentau, Q. J. (1997) Inhibition of virus attachment to CD4⁺ target cells is a major mechanism of T cell line-adapted HIV-1 neutralization. *J Exp Med* 186, 1287-98.

Vercruyse, T., Pardon, E., Vanstreels, E., Steyaert, J., and Daelemans, D. (2010) An Intrabody Based on a Llama Single-domain Antibody Targeting the N-terminal α -Helical Multimerization Domain of HIV-1 Rev Prevents Viral Production. *J Biol Chem* 285, 21768-80.

Volkman, L. E., and Goldsmith, P. A. (1984) Budded *Autographa californica* NPV 64K protein: Further biochemical analysis and effects of postimmunoprecipitation sample preparation conditions. *Virology* 139, 295-302.

Volkman, L. E., and Goldsmith, P. A. (1985) Mechanism of neutralization of budded *Autographa californica* nuclear polyhedrosis virus by a monoclonal antibody: Inhibition of entry by adsorptive endocytosis. *Virology* 143, 185-95.

von Schwedler, U. K., Stemmler, T. L., Klishko, V. Y., Li, S., Albertine, K. H., Davis, D. R., and Sundquist, W. I. (1998) Proteolytic refolding of the HIV-1 capsid protein amino-terminus facilitates viral core assembly. *EMBO J* 17, 1555-68.

Wang, T., and Duan, Y. (2011) Probing the stability-limiting regions of an antibody single-chain variable fragment: a molecular dynamics simulation study. *PEDS* 9, 649-57.

Waninger, S., Kuhen, K., Hu, X., Chatterton, J. E., Wong-Staal, F., and Tang, H. (2004) Identification of Cellular Cofactors for Human Immunodeficiency Virus Replication via a Ribozyme-Based Genomics Approach. *J Virol* 78, 12829-37.

Wieggers, K., Rutter, G., Kottler, H., Tessmer, U., Hohenberg, H., and Kräusslich, H.-G. (1998) Sequential Steps in Human Immunodeficiency Virus Particle Maturation Revealed by Alterations of Individual Gag Polyprotein Cleavage Sites. *J Virol* 72, 2846-54.

Williams, B. R., and Zhu, Z. (2006) Intrabody-based approaches to cancer therapy: status and prospects. *Curr Med Chem* 13, 1473-80.

Winters, M. A., and Merigan, T. C. (2005) Insertions in the Human Immunodeficiency Virus Type 1 Protease and Reverse Transcriptase Genes: Clinical Impact and Molecular Mechanisms. *Antimicrob Agents Chemother* 49, 2575-82.

Wörn, A., and Plückthun, A. (1998) Mutual Stabilization of VL and VH in Single-Chain Antibody Fragments, Investigated with Mutants Engineered for Stability. *Biochemistry* 37, 13120-7.

Xu, D., Xu, Y., and Uberbacher, E. C. (2000) Computational tools for protein modeling. *Curr Protein Pept Sci* 1, 1-21.

Yoon, Y. W., Kwon, H. M., Hwang, K.-C., Choi, E.-Y., Hong, B.-k., Kim, D., Kim, H.-S., Cho, S. H., Song, K. S., and Sangiorgi, G. (2005) Upstream regulation of matrix metalloproteinase by EMMPRIN; extracellular matrix metalloproteinase inducer in advanced atherosclerotic plaque. *Atherosclerosis* 180, 37-44.

Yu - Chen, H. (2006) Baculovirus Vectors for Gene Therapy. *Academic Press* 68, 287-320.

Yuan, X., Yu, X., Lee, T. H., and Essex, M. (1993) Mutations in the N-terminal region of human immunodeficiency virus type 1 matrix protein block intracellular transport of the Gag precursor. *J Virol* 67, 6387-94.

Zwick, M. B., Labrijn, A. F., Wang, M., Spencehauer, C., Saphire, E. O., Binley, J. M., Moore, J. P., Stiegler, G., Katinger, H., Burton, D. R., and Parren, P. W. H. I. (2001) Broadly Neutralizing Antibodies Targeted to the Membrane-Proximal External Region of Human Immunodeficiency Virus Type 1 Glycoprotein gp41. *J Virol* 75, 10892-905.