REFERENCES

Aguilar R.C., Blank V.C., Retegui L.A. and Roguin L.P. Positive cooperative effects between receptors induced by an anti-human growth hormone allosteric monoclonal antibody. Life Sci. 2000; 66: 1021-1031.

Altruda F., Cervella P., Gaeta M. L., Daniele A., Giancotti F., Tarone G., Stefanuto G. and Silengo L. Cloning of cDNA for a novel mouse membrane glycoprotein (gp42): shared identity to histocompatibility antigens, immunoglobulins and neural-cell adhesion molecules. Gene. 1989; 85: 445-451.

An G., Dong N., Shao B., Zhu M., and Ruan C. Expression and characterization of the ScFv fragment of antiplatelet GPIIIa monoclonal antibody SZ-21. Thromb. Res. 2002; 105: 331-337.

Appenzeller U., Blaser K., and Crameri R. Phage display as a tool for rapid cloning of allergenic proteins. Arch. Immunol. Ther. Exp. (Warsz). 2001; 49: 19-25.

Azzazy, Hassan M. E., Highsmith W. and Edward Jr. Phage display technology: clinical applications and recent innovations. Clin. Biochem. 2002; 35: 425-445.

Baker D., Sohl J. L. and Agard D. A. A protein-folding under kinetic control. Nature. 1992; 356: 263-265.

Barbas C. F. 3rd. Recent advances in phage display. Curr. Opin. Biotechnol. 1993; 4: 526-530.

Barbas C. F. and Wagner J. Synthetic human antibodies: selecting and evolving functional proteins. A companion to Method in Enzymology 1995; 8:94-103.

Berditchevski F., Chang S., Bodorova J. and Hemler M. E. Generation of monoclonal antibodies to integrin-associated proteins. Evidence that alpha3beta1 complexes with EMMPRIN/basigin/OX47/M6. J. Biol. Chem. 1997; 272:29174-29180.

Better M., Chang C. P., Robinson R. R. and Horwitz A. H. *Escherichia coli* secretion of an active chimeric antibody fragment. Science. 1998; 240: 1041-1043.

Biswas C., Zhang Y., DeCastro R., Guo H., Nakamura T., Kataoka H. and Nabeshima K. The human tumor cell-derived collagenase stimulatory factor (renamed EMMPRIN) is a member of the immunoglobulin superfamily. Cancer Res. 1995; 55: 434-439.

Blum P., Velligan M., Lin N. and Martin A. DnaK-mediated alterations in human growth hormone protein inclusion bodies. Bio/Technology. 1992; 10: 301-301.

Boder E. T. and Wittrup K. D. Yeast surface display for screening combinatorial polypeptide libraries. Nat. Biotechnol. 1997; 15: 553-557.

Braig K., Otwinowski Z., Hegde R., Boisvert D. C., Joachimiak A., Horwich A. L. and Sigler P. B. The crystal structure of the bacterial chaperonin GroEL at 2.8 A. Nature. 1994; 371: 578-586.

Burton D. R. Phage display. Immunotechnology. 1995; 1: 87-94.

Cesareni G. Peptide display on filamentous phage capsids. A new powerful tool to study protein-ligand interaction. FEBS Lett. 1992; 307: 66-70.

Cesario M. M. and Bartles J. R. Compartmentalization, processing and redistribution of the plasma membrane protein CE9 on rodent spermatozoa. J. Cell Sci. 1994; 107: 561-570.

Cheng Y, Li X, Kamholz J, Burns FR. Organization of the mouse GP42/Basigin gene: a member of the Ig superfamily. Biochem. Biophys. Acta. 1994; 1217: 307-311.

Cull M. G., Miller J. F. and Schatz P. J. Screening for receptor ligands using large libraries of peptides linked to the C terminus of the lac repressor. Proc. Natl. Acad. Sci. U. S. A. 1992; 89: 1865-1869.

Davies D.R. and Cohen G.H. Interactions of protein antigens with antibodies. Proc. Natl. Acad. Sci. U. S. A. 1996; 93: 7-12.

DeBernadez-Clark E. and Georgiou. Inclusion bodies and recovery of proteins from the aggregated state, in: *Protein Refolding*. ACS Symposium Series 470. Washington D.C., 1991: p 1.

DeCastro R., Zhang Y., Guo H., Kataoka H., Gordon M. K., Toole B. p. and Biswas G. Human keratinocytes express EMMPRIN, an extracellular matrix metalloproteinase inducer. J. Invest. Dermatol. 1996; 106: 1260-1265.

Dente L., Cesareni G., Micheli G., Felici F., Folgori A., Luzzago A., Monaci P., Nicosia A. and Delmastro P. Monoclonal antibodies that recognise filamentous phage: tools for phage display technology. Gene. 1994; 148: 7-13.

Duenas M., Vazquez J., Ayala M., Soderlind E., Ohlin M., Perez L., Borrebaeck C.A., and Gavilondo J.V.Intra- and extracellular expression of an scFv antibody fragment in *E. coli*: effect of bacterial strains and pathway engineering using GroES/L chaperonins. BioTechniques. 1994; 16: 476-480.

Ellis S. M., Nabeshima K. and Biswas C. Monoclonal antibody preparation and purification of a tumor cell collagenase-stimulatory factor. Cancer Res. 1989; 49: 3385-3391.

Fadool J. M. and Linser P. J. Differential glycosylation of the 5A11/HT7 antigen by neural retina and epithelial tissues in the chicken. J. Neurochem. 1993; 60: 1354-1364.

Felzmann T., Gadd S., Majdic O., Maurer D., Petera P., Smolen J. and Knapp W. Analysis of function-associated receptor molecules on peripheral blood and synovial fluid granulocytes from patients with rheumatoid and reactive arthritis. J. Clin. Immunol. 1991; 11: 205-212.

Fenton W. A., Kashi Y., Furtak K. and Horwich A. L. Residues in chaperonin GroEL required for polypeptide binding and release. Nature. 1994; 371: 614-619.

Fossum S., Mallett S. and Barclay A. N. The MRC OX-47 antigen is a member of the immunoglobulin superfamily with an unusual transmembrane sequence. Eur. J. Immunol. 1991; 21: 671-679.

Fuchs P., Breitling F., Dübel S., Seehaus T. and Little M. Targeting recombinant antibodies to the surface of Escherichia coli: fusion to a peptidoglycan associated lipoprotein. Biotechnology . 1991; 9: 1369-1372.

Griffiths A. D. Production of human antibodies using bacteriophage. Curr. Opin. Immunol. 1993; 5: 263-267.

Guo H, Zucker S, Gordon M K, Toole B P and Biswas C. Stimulation of matrix metalloproteinase production by recombinant extracellular matrix metalloproteinase production by recombinant Chinese hamster ovary cells. J. Biol. Chem. 1997; 272: 24.

Guo H., Li R., Zucker S. and Toole B. P. EMMPRIN (CD147), an inducer of matrix metalloproteinase synthesis, also binds interstitial collagenase to the tumor cell surface. Cancer Res. 2000; 60: 888-891.

Hafmann G., Brailly H. and Bernadac A. J. Targeting of interleukin-2 to the periplasm of Escherichia coli. Gen. Microbiol. 1993; 139: 2465-2473.

Hardy S. J. and Randall L. L. A kinetic partitioning model of selective binding of nonnative proteins by the bacterial chaperone SecB. Science. 1991; 251: 439-443.

Hartl F. U., Martin J. and Neupert W. Protein folding in the cell: the role of molecular chaperones Hsp70 and Hsp60. Annu. Rev. Biophys. Biomol. Struct. 1992; 21: 293-322.

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

Igakura T., Kadomatsu K., Taguchi O., Muramatsu H., Kaname T., Miyauchi T., Yamamura K., Arimura K. and Muramatsu T. Roles of basigin, a member of the immunoglobulin superfamily, in behavior as to an

irritating odor, lymphocyte response, and blood-brain barrier. Biochem. Biophys. Res. Commun. 1996; 224:33-36.

Igakura T., Kadomatsu K., Kaname T., Muramatsu H., Fan Q. W., Miyauchi T., Toyama Y., Kuno N., Yuasa S. and Takahashi. A null mutation in basigin, an immunoglobulin superfamily member, indicates its important roles in peri-implantation development and spermatogensis. Dev. Biol. 1998; 194:152-165.

Intasai N., Arooncharus P., Kasinrek W. and Tayapiwatana C. Construction of high-density display of CD147 ectodomain on VCSM13 phage via gpVIII: effects of temperature, IPTG, and helper phage infection period. Protein Expr. Purif. 2003; *in press*.

Juel C. and Halestrap A.P. Lactate transport in skeletal muscle - role and regulation of the monocarboxylate transporter. J. Physiol. 1999; 517: 633-642.

Kaname T., Miyauchi T., Kuwano A., Matsuda Y., Muramatsu T. and Kajii T. Mapping basigin (BSG), a member of the immunoglobulin superfamily. Cytogenet. Cell Genet. 1993; 64: 195-197.

Kasinrerk W., Fiebiger E., Stefanová I., Baumruker T., Knapp W. and Stockinger H. Human leukocyte activation antigen M6, a member of the Ig superfamily, is the species homologue of rat OX-47, mouse basigin, and chicken HT7 molecule. J. Immunol. 1992; 149: 847-854.

Kasinrerk W., Tokrasinwit N. and Phunpae P. CD147 monoclonal antibodies induce homotypic cell aggregation of monocytic cell line U937 via LFA-1/ICAM-1 pathway. Immunology. 1999; 96: 184.

Khunkeawla P., Moonsom S., Staffler G., Kongtawelert P. and Kasinrerk W. Engagement of CD147 molecule-induced cell aggregation through the activation of protein kinases and reorganization of the cytoskeleton. Immunobiology. 2001; 203: 659.

Kirk P., Wilson M.C., Heddle C., Brown M.H., Barclay A.N.and Halestrap A.P. CD147 is tightly associated with lactate transporters MCT1 and MCT4 and facilitates their cell surface expression. Embo. J. 2000; 19: 3896-3904.

Kirsch A. H., Diaz L. A. Jr., Bonish B., Antony P. A. and Fox D. A. The pattern of expression of CD147/neurothelin during human T-cell ontogeny as defined by the monoclonal antibody 8D6. Tissue Antigens. 1997; 50: 147-152.

Koch C., Staffler G., Huttinger R., Hilgert I., Prager E., Cerny J., Steilein, P., Majdic O., Horejsi V., Stockinger H. T cell activation-associated epitoped of CD147 in regulation of the T cell response, and their definition by antibody affinity and antigen density. Int. Immunol. 1999; 11: 777-786.

Kuno N, Kadomatsu K, Fan Q W, et al. Female sterility in mice lacking the basigin gene, which encodes a transmembrane glycoprotein belonging to the immunoglobulin superfamily. FEBS lett. 1998; 425:191-194.

Kurokawa Y., Yanagi H. and Yura T. Overexpression of protein disulfide isomerase DsbC stabilizes multiple-disulfide-bonded recombinant protein produced and transported to the periplasm in *Escherichia coli.* Appl. Environ. Microbiol. 2000; 66: 3960-3965.

Ladner R. C. Constrained peptides as binding entities. Trends Biotechnol. 1995; 13: 426-430.

Ladner R. C. Phage display and pharmacogenomics. Pharmacogenomics. 2000; 1: 199-202.

Laminet A. A., Kumamoto C. A. and Plückthun A. Folding in vitro and transport in vivo of pre-beta-lactamase are SecB independent. Mol. Microbiol. 1991; 5: 117-122.

Liberek K., Skowyra D., Zylicz M., Johnson C. and Georgopoulos C. The *Escherichia coli* DnaK chaperone, the 70-kDa heat shock protein eukaryotic equivalent, changes conformation upon ATP hydrolysis, thus triggering its dissociation from a bound target protein. J. Biol. Chem. 1991; 266: 14491-14496.

Martin U., Fischer S., Kohnert U., Rudolph R., Sponer G., Stern A. and Strein K. Coronary thrombolytic properties of a novel recombinant plasminogen activator (BM 06.022) in a canine model. J. Cardiovasc. Pharmacol. 1991; 18: 111-119.

Mead D. A. and Kemper B. Chimeric single-stranded DNA phage-plasmid cloning vectors. Biotechnology . 1988; 10: 85-102.

Mendoza J. A., Demeler B. and Horowitz P. M. Alteration of the quaternary structure of cpn60 modulates chaperonin-assisted folding. Implications for the mechanism of chaperonin action. J. Biol. Chem. 1994; 269: 2447-2451.

Miksch G., Kleist S., Friehs K. and Flaschel E. Overexpression of the phytase from *Escherichia coli* and its extracellular production in bioreactors. Appl. Microbiol. Biotechnol. 2002; 59: 685-694.

Miroux B. and Walker J. E. Over-production of protein in *Escherichia coli*: mutant hosts that allow synthesis of some membrane proteins and globular protein at high levels. J. Mol. Biol. 1996; 260: 289-298.

Mitraki A., Fane B., Haase-Pettingell C., Sturtevant J. and King J. Global suppression of protein folding defects and inclusion body formation. Science. 1991; 253: 54-58.

Miyauchi T., Kanekura T., Yamaoka A., Ozawa M., Miyazawa S. and Muramatsu T. Basigin, a new, broadly distributed member of the immunoglobulin superfamily, has strong homology with both the immunoglobulin V domain and the beta-chain of major histocompatibility complex class II antigen. J. Biochem. 1990; 107: 316-323.

Miyauchi T., Masuzawa Y. and Muramatsu T. The basigin group of the immunoglobulin superfamily: complete conservation of a segment in and around transmembrane domains of human and mouse basigin and chicken HT7 antigen. J. Biochem. 1991; 110: 770-774.

Muraoka K., Nabeshima K., Murayama T., Biswas, C. and Koono M. Enhanced expression of a tumor-cell-derived collagenase-stimulatory factor in urothelial carcinoma: its usefulness as a tumor marker for bladder cancers. Int. J. Cancer. 1993; 55: 19-26.

Naruhashi K, Kadomatsu K, Igakura T, et al. Abnormalities of sensory and memory function in mice lacking BsG gene. Biophys. Res. Commun. 1997; 236:733-737.

Nehme C. L., Fayos B. E. and Bartles J. R. Distribution of the integral plasma membrane glycoprotein CE9 (MRC OX-47) among rat tissues and its induction by diverse stimuli of metabolic activation. Biochem. J. 1995; 310: 693-698.

Neri D., Petrul H.and Roncucci G. Engineering recombinant antibodies for immunotherapy. Cell Biophysics. 1995; 27:47-61.

Pengin P. Role of CD147 molecule on regulation of cell proliferation and apoptosis. Thesis for Master of Sciences in Medical Technology, Chiang Mai University, 2003.

Puri N.,Crivelli E.,Cardamone M., Fiddes R., Bertolini J., Ninham B., and Brandon M. R. Solubilization of growth hormone and other recombinant protein from *Escherichia coli* inclusion bodies by using cationic surfactant. Biochem J. 1992; 285: 871-879.

Rizzo A., Aragona E., Dino O., Pisa R., Vignola M., Guddo F., Albanesse M., Guerrera D., Orlando A., Simonetti R., Raiata F., Realmuto A., Bonsignore G., Pagliaro L., and Malizia G. CD147 workshop: expression of CD147 (neurothelin) in liver and lung cancer. In Kishimoto T., Kikutani H., vondem Borne A. E. G. K., Shwa S., Springer T. A., Sugamura K. and Zola H. eds, *Leukocyte Typing VI.* Garland publishing, New York. 1997: 763.

Russel M. Filamentous phage assembly. Mol. Microbiol 1991; 5: 1607-1613.

Schiavone E. M., Tortora V., Armetta I., Bontempo P., Mosti M. R., Pezone L., Nola E., Puga G. A., Vacca C., and Molinari A. M. CD147 workshop: expression, modulation, and involvement in homotypic aggregation and adhesion to matrix of molecules recognized by monoclonal antibodies to CD147 on breast cancer cell lines. In Kishimoto T., Kikutani H., vondem Borne A. E. G. K., Shwa S., Springer T. A., Sugamura K. and Zola H. eds, *Leukocyte Typing VI*. Garland publishing, New York. 1997: 764.

Schlosshauer B. and Herzog K. H. Neurothelin: an inducible cell surface glycoprotein of blood-brain barrier-specific endothelial cells and distinct neurons. J. Cell Biol. 1990; 110: 1261-1274.

Schuster V. L., Lu R., Kanai N., Bao Y., Rosenberg S., Prié D., Ronco P. and Jennings M. L. Cloning of the rabbit homologue of mouse 'basigin' and rat 'OX-47': kidney cell type-specific expression, and regulation in collecting duct cells. Biochim. Biophys. Acta. 1996; 1311: 13-19.

Seulberger H., Lottspeich F. and Risau W. The inducible blood--brain barrier specific molecule HT7 is a novel immunoglobulin-like cell surface glycoprotein. EMBO J. 1990; 9: 2151-2158.

Siegel D. L. Research and clinical applications of antibody phage display in transfusion medicine. Transfus. Med. Rev. 2001; 15: 35-52.

Skerra A. and Plückthun A. Assembly of a functional immunoglobulin Fv fragment in *Escherichia coli*. Science. 1988; 240: 1038-1041.

Smith G. P. Filamentous fusion phage: novel expression vectors that display cloned antigen on the virion surface. Science. 1985; 228: 1315-1317.

Spring F. A., Holmes C. H., Simpson K. L., Mawby W. J., Mattes M. J., Okubo Y. and Parsons S. F. The Oka blood group antigen is a marker for the M6 leukocyte activation antigen, the human homologue of OX-47 antigen, basigin and neurothelin, an immunoglobulin superfamily molecule that is widely expressed in human cells and tissues. Eur. J. Immunol. 1997; 27: 891-897.

Stockinger H., Ebel T., Hansmann C., Koch C., Majdic O., Prager E., Patel D. D., Fox D. A., Horejsi V., Sagawa K., and Shen D. C. CD147 (neurothelin/basigin) workshop panel report. In Kishimoto T., Kikutani H., von dem Borne A. E. G.K., Goyert S. M., Mason D. Y., Miyasaka M., Moretta L., Okumura K., Shaw S., Springer T. A., Sugamura K. and Zola, H.,eds, Leukocyte Typing VI. Garland Publishing, New York. 1997: 760.

Sun J. and Helmer E. M. Regulation of MMP-1 and MMP-2 Production through CD147/Extracellular Matrix Metalloproteinase Inducer Interactions. Cancer Res. 2001; 61: 2276 –2281.

Suter-Crazzolara C. and Unsicker K. Improved expression of toxic protein in *E. coli*. BioTechniques.1995; 19: 202-204.

Tayapiwatana C. and Kasinrerk W. Construction and characterization of phage-displayed leukocyte surface molecule CD99. Appl. Microbiol. Biotechnol. 2002; 60: 336-341.

Teschke C. M., Kim J., Song T., Park S., Park C. and Randall L. L. Mutations that affect the folding of ribose-binding protein selected as suppressors

of a defect in export in *Escherichia coli*. J. Biol. Chem. 1991; 266: 11789-11796.

Towbin H., Erard F., van Oostrum J., Schmitz A. and Rordorf C. Neoepitope immunoassay: an assay for human interleukin 1 beta based on an antibody induced conformational change. J. Immunoassay. 1996; 17: 353-369.

Valax P. and Georgiou G. Molecular characterization of beta-lactamase inclusion bodies produced in *Escherichia coli*. Biotechnol. Prog. 1993; 9: 539-547.

Walker K. W., Gilbert H. F. Effect of redox environment on the in vitro and in vivo folding or RTEM-1 beta-lactamase and *Escherichia coli* alkaline phosphatase. J. Biol. Chem. 1994; 269: 28487-28493.

Wall J.G. and Plucton A. Effect of overexpressing folding modulators on the in vivo folding of heterologous proteins in *Escherichia coli*. Curr. Opin. Biotechnol. 1995; 6: 507-516.

Wickner W., Driessen A. J. and Hartl F. U. The enzymology of protein translocation across the *Escherichia coli* plasma membrane. Annu. Rev. Biochem. 1991; 60: 101-124.

Winter G., Griffiths A. D., Hawkins R. E. and Hoogenboom H. R. Making antibodies by phage display technology. Annu. Rev. Immunol. 1994; 12: 433-455.

Mitaku Group.(No Date) Department of Biotechnology Tokyo University of Agriculture and Technology. "Classification and Secondary Structure

Prediction of Membrane Proteins."[Online]. Available http://sosui.proteome.bio.tuat.ac.jp/sosuiframe0.html (3 August 2003).

Tayapiwatana C. 1998. "Filamentous phage life cycle." [Online]. Available http:// www.ams.cmu.ac.th/depts/clinimm/p_chatchai.html. (11 September 2003).

University of Limerick. 2002. "Protein folding and exportation." [Online]. Available http://www.ul.ie/~ces/folding_Mar01.htm (31 August 2003).