



## Scientific References for Cyto-Ess™

Cyto-Ess™ is a nano-molecular refined lacteal complex containing a vast array of naturally occurring molecules with a molecular weight of less than 100,000 Dalton. The presence and viability of specific molecules has been confirmed by application of measurement and assay technologies in the laboratory of Tufts University in Boston, MA and at Tiburon Labs in Tucson, AZ. Expression of certain molecules in Cyto-Ess™ has been expanded by the application of patented and proprietary processes.

Each of the molecules has a unique purpose in supporting immune function and the following references have been arranged by molecule. This document does not include all the molecules present in Cyto-Ess™. Many have not yet been sequenced and studied.

### Defensins

**Bateman A et al** The effect of HP-1 and related neutrophil granule peptides on DNA synthesis in HL-60 cells. *Regulatory Peptides* 35: 135-143 (1991)

**Bateman A et al** The isolation and identification of multiple forms of the neutrophil granule peptides from human leukemic cells. *Journal of Biological Chemistry* 266: 7524-7530 (1991)

**Boman HG** Antibacterial peptides: key components needed in immunity. *Cell* 65: 205-207 (1991)

**Cullor JS et al** Bactericidal potency and mechanistic specificity of neutrophil defensins against bovine mastitis pathogens. *Vet. Microbiol.* 29: 49-58 (1991)

**Daher KA et al** Isolation and characterization of human defensin cDNA clones. *Proceedings of the National Academy of Science (USA)* 85: 7327-7331 (1988)

**Eisenhauer PB and Lehrer RI** Mouse neutrophils lack defensins. *Infection and Immunity* 60: 3446-3447 (1992)

- Eisenhauer PB et al** Cryptdins: antimicrobial defensins of the murine small intestine. *Infect. Immunology* 60: 3556-3565 (1992)
- Ganz T et al** Defensins: microbicidal and cytotoxic peptides of mammalian host defense cells. *Medical Microbiology and Immunology* 181: 99-105 (1992)
- Garcia JR et al** Identification of a novel, multifunctional beta-defensin (human beta-defensin 3) with specific antimicrobial activity. Its interaction with plasma membranes of *Xenopus* oocytes and the induction of macrophage chemoattraction. *Cell and Tissue Research* 306(2): 257-64 (2001)
- Gera JF and Lichtenstein A** Human neutrophil peptide defensins induce single strand DNA breaks in target cells. *Cellular Immunology* 138: 108-120 (1991)
- Harwig SS et al** Characterization of defensin precursors in mature human neutrophils. *Blood* 79: 1532-1537 (1992)
- Hill CP et al** Crystal structure of defensin HNP-3, an amphiphilic dimer: mechanisms of membrane permeabilization. *Science* 251: 1481-1485 (1991)
- Jones DE and Bevins CL** Paneth cells of the human small intestine express an antimicrobial peptide gene. *Journal of Biological Chemistry* 267: 23216-23225 (1992);
- Lehrer et al** Defensins: antimicrobial and cytotoxic peptides of mammalian cells. *Annual Review of Immunology* 11: 105-128 (1993)
- Lichtenstein A** Mechanism of mammalian cell lysis mediated by peptide defensins. Evidence for an initial alteration of the plasma membrane. *Journal of Clinical Investigation* 88: 93-100 (1991)
- Lin MY et al** The defensin-related murine CRS1C gene: expression in Paneth cells and linkage to Defcr, the cryptdin locus. *Genomics* 14: 363-368 (1992)
- Liu L et al** The human beta-defensin-1 and alpha-defensins are encoded by adjacent genes: two peptide families with differing disulfide topology share a common ancestry. *Genomics* 43: 316-320 (1997)
- Michaelson D et al** Cationic defensins arise from charge-neutralized propeptides: a mechanism for avoiding leukocyte autotoxicity? *Journal of Leukocyte Biology* 51: 634-639 (1992)
- Panyutich AV et al** Human neutrophil defensin and serpins form complexes and inactivate each other. *American Journal of Respir. Cell Mol. Biol.* 12: 351-357 (1995);
- Ouellette AJ and Lualdi JC** A novel mouse gene family coding for cationic, cysteine-rich peptides. Regulation in small intestine and cells of myeloid origin. *Journal of Biological Chemistry* 265: 9831-9837 (1990)
- Ouellette AJ et al** Purification and primary structure of murine cryptdin-1, a Paneth cell Defensin. *FEBS Letters* 304: 146-148 (1992)

**Panyutich AV et al** An enzyme immunoassay for human defensins [Journal of Immunological Methods](#) 141: 149-155 (1991)

**Panyutich A and Ganz T** Activated alpha 2-macroglobulin is a principal defensin-binding protein. *American Journal of Respir. Cell. Mol. Biol.* 5: 101-106 (1991);

**Ouellette AJ and Lualdi JC** A novel mouse gene family coding for cationic, cysteine-rich peptides: regulation in small intestine and cells of myeloid origin. *Journal of Biological Chemistry* 265: 9831-9837 (1990)

**Selsted ME et al** Enteric Defensins: antibiotic peptide components of intestinal host defense. *Journal of Cell Biology* 118: 929-936 (1992)

**Sparkes RS et al** Assignment of defensin gene(s) to human chromosome 8p23. *Genomics* 5: 240-244 (1989)

**Territo MC et al** Monocyte-chemotactic activity of defensins from human neutrophils. *Journal of Clinical Investigation* 84: 2017-2020 (1989)

**Valore EV and Ganz T** Posttranslational processing of defensins in immature human myeloid cells. *Blood* 79: 1538-1544 (1992)

**Raj PA, Dentino AR.** *FEMS Microbiol Lett* 2002 Jan 2;206(1):9-18  
Current status of defensins and their role in innate and adaptive immunity.

**Kluver E, Schulz A, Forssmann WG, Adermann K.** *J Pept Res* 2002 Jun;59(6):241-8  
Chemical synthesis of beta-defensins and LEAP-1/hepcidin.

**Cullor JS et al** Bactericidal potency and mechanistic specificity of neutrophil defensins against bovine mastitis pathogens. *Vet. Microbiol.* 29: 49-58 (1991).

**Gera JF and Lichtenstein A** Human neutrophil peptide defensins induce single strand DNA breaks in target cells. *Cellular Immunology* 138: 108-120 (1991).

Liu AY, et. al. "Human (beta)-Defensin-2 Production in Keratinocytes is Regulated by Interleukin-1, Bacteria, and the State of Differentiation", *J Invest Dermatol* 2002 Feb; 118(2): 275-281.

## Granulysins

**Kishi A, Takamori Y, Ogawa K, Takano S, Tomita S, Tanigawa M, Niman M, Kishida T, Fujita S.** Differential expression of granulysin and perforin by NK cells in cancer patients and correlation of impaired granulysin expression with progression of cancer, Department of Microbiology, Kyoto Prefectural University of Medicine, Kyoto, 602-0841, Japan. [Kishia@lpc-dns.louis-pasteur.or.jp](mailto:Kishia@lpc-dns.louis-pasteur.or.jp), *Cancer Immunol Immunother* 2002 Jan;50(11):604-14

- Persio JF and Abboud CN** Activation of neutrophils by granulocyte-macrophage colony-stimulating factor. *Immunology Ser.* 57: 457-84 (1992)
- Leippe M.** Ancient weapons: NK-lysin, is a mammalian homolog to pore-forming peptides of a protozoan parasite, *Cell* 1995 Oct 6;83(1):17-8
- Bruhn H, Leippe M.** Comparative modeling of amoebapores and granulysin based on the NK-lysin structure-structural and functional implications, *Biol Chem* 1999 Jul-Aug;380(7-8):1001-7
- Worku S, Hoft DF.** Differential effects of control and antigen-specific T cells on intracellular mycobacterial growth, *Infect Immun* 2003 Apr;71(4):1763-73
- Hamamoto K, Kida Y, Zhang Y, Shimizu T, Kuwano K.** Antimicrobial activity and stability to proteolysis of small linear cationic peptides with D-amino acid substitutions, *Microbiol Immunol* 2002;46(11):741-9
- Anderson DH, Sawaya MR, Cascio D, Ernst W, Modlin R, Krensky A, Eisenberg D.** Granulysin crystal structure and a structure-derived lytic mechanism., *J Mol Biol* 2003 Jan 10;325(2):355-65
- Sun Q, Burton RL, Lucas KG.** Cytokine production and cytolytic mechanism of CD4(+) cytotoxic T lymphocytes in ex vivo expanded therapeutic Epstein-Barr virus-specific T-cell cultures, *Blood* 2002 May 1;99(9):3302-9
- Dieli F, Sireci G, Caccamo N, Di Sano C, Titone L, Romano A, Di Carlo P, Barera A, Accardo-Palumbo A, Krensky AM, Salerno A.** Selective depression of interferon-gamma and granulysin production with increase of proliferative response by Vgamma9/Vdelta2 T cells in children with tuberculosis, *J Infect Dis* 2002 Dec 15;186(12):1835-9
- Canaday DH, Wilkinson RJ, Li Q, Harding CV, Silver RF, Boom WH.** CD4(+) and CD8(+) T cells kill intracellular Mycobacterium tuberculosis by a perforin and Fas/Fas ligand-independent mechanism, *J Immunol* 2001 Sep 1;167(5):2734-42
- Krensky AM.** Granulysin: a novel antimicrobial peptide of cytolytic T lymphocytes and natural killer cells. *Biochem Pharmacol* 2000 Feb 15;59(4):317-20

# Immunoglobulin Production Stimulating Factor (IPSF)

**Sugahara T et al** The mode of actions of glyceraldehyde-3-phosphate dehydrogenase identified as an immunoglobulin production stimulating factor. *FEBS Letters* 368(1): 92-96 (1995)

**Sugahara T et al** Immunoglobulin production stimulating factor-II alpha (IPSF-II alpha) is glyceraldehyde-3-phosphate dehydrogenase like protein. *Cytotechnology* 6(2): 115-120 (1991)

**Sugahara T et al** Purification and characterization of immunoglobulin production stimulating factor-II beta derived from Namalwa cells. *Cytotechnology* 10(2): 137-146 (1992)

**Sugahara T et al** Inhibition of immunoglobulin production stimulating activity of glyceraldehyde-3-phosphate dehydrogenase by nucleotides. *Bioscience Biotechnology Biochemistry* 62(6): 1237-9 (1998)

**Sugahara T et al** A novel function of enolase from rabbit muscle; an immunoglobulin production stimulating factor. *Biochimica Biophysica Acta* 1380(2): 163-76 (1998);

**Sugahara T et al** The mode of actions of lysozyme as an immunoglobulin production stimulating factor. *Biochimica Biophysica Acta* 1475(1): 27-34 (2000)

**Toyoda T et al** Purification and characterization of immunoglobulin production stimulating factor derived from human B lymphoblastoid HO-323 cells. *Cytotechnology* 3(2): 189-197 (1990)

**Yamada K et al** Partial purification and characterization of immunoglobulin production stimulating factor derived from Namalwa cells. *In vitro Cellular and Developmental Biology* 25: 243-247 (1989)

## Lactoferrin

**Nuijens JH, van Berkel PH, Schanbacher FL.** Structure and biological actions of lactoferrin, *J Mammary Gland Biol Neoplasia* 1996 Jul; 1(3):285-95

**Weinberg ED.** Human lactoferrin: a novel therapeutic with broad spectrum potential, *J Pharm Pharmacol* 2001 Oct;53(10):1303-10

**Tomita M, Wakabayashi H, Yamauchi K, Teraguchi S, Hayasawa H.** Bovine lactoferrin and lactoferricin derived from milk: production and applications. *Biochem Cell Biol* 2002;80(1):109-12

**Faurschou M, Sorensen O, Johnsen A, Askaa J, Borregaard N.** Defensin-rich granules of human neutrophils: characterization of secretory properties *BiochimBiophysActa* 2002 Aug 19;1591(1-3):29

## Cathelicidins

**Agerberth B et al** The human antimicrobial and chemotactic peptides LL-37 and alpha-defensins are expressed by specific lymphocyte and monocyte populations. *Blood* 96(9): 3086-93 (2000)

**Cowland JB et al** hCAP-18, a cathelin/pro-bactenecin-like protein of human neutrophil specific granules. *FEBS Letters* 368: 173-176 (1995)

**Frohm M et al** The expression of the gene coding for the antibacterial peptide LL-37 is induced in human keratinocytes during inflammatory disorders. *Journal of Biological Chemistry* 272(24): 15258-63 (1997)

**Gallo RL et al** Identification of CRAMP, a cathelin-related antimicrobial peptide expressed in the embryonic and adult mouse. *Journal of Biological Chemistry*. 272: 13088-93 (1997)

**Gudmundsson GH et al** The human gene FALL39 and processing of the cathelin precursor to the antibacterial peptide LL-37 in granulocytes. *European Journal of Biochemistry* 238: 325-332 (1996)

**Harwig SS et al** Prophenin-1, an exceptionally proline-rich antimicrobial peptide from porcine leukocytes. *FEBS Letters* 362: 65-69 (1995)

**Johansson J et al** Conformation-dependent antibacterial activity of the naturally occurring human peptide LL-37. *Journal of Biological Chemistry* 273(6): 3718-24 (1998)

**Kirikae T et al** Protective effects of a human 18-kilodalton cationic antimicrobial protein (CAP18)-derived peptide against murine endotoxemia. *Infection and Immunity* 66: 1861-1868 (1998)

**Migorodskaya OA et al** Primary structure of three cationic peptides from porcine neutrophils. Sequence determination by the combined usage of electrospray mass spectrometry and Edman degradation. *FEBS Letters* 330: 339-342 (1993)

**Nagaoka I et al** Cathelicidin family of antibacterial peptides CAP18 and CAP11 inhibit the expression of TNF-alpha by blocking the binding of LPS to CD14+ cells. *Journal of Immunology* 167: 3329-3338 (2001)

**Niyonsaba F et al** A cathelicidin family of human antibacterial peptide LL-37 induces mast cell chemotaxis. *Immunology* 106: 20-26 (2002)

**Nizet V et al** Innate antimicrobial peptide protects the skin from invasive bacterial infection. *Nature (London)* 414: 454-457 (2001)

**Sorensen OE et al** Human cathelicidin, hCAP-18, is processed to the antimicrobial peptide LL-37 by extracellular cleavage with proteinase 3. *Blood* 97: 3951-3959 (2001);

**Sorensen O et al** An ELISA for hCAP-18, the cathelicidin present in human neutrophils and plasma [Journal of Immunological Methods](#) 206: 53-59 (1997)

**Wang Y et al** Apolipoprotein A1 binds and inhibits the human antibacterial/cytotoxic peptide LL-37. *Journal of Biological Chemistry* 273: 33115-18 (1998)

**Zanetti M et al** Cathelicidins: a novel protein family with a common proregion and a variable C-terminal antimicrobial domain. *FEBS Letters* 374: 1-5 (1995)

## Transfer Factors

**Lawrence HS**, The cellular transfer of cutaneous hypersensitivity to tuberculin in man, *Proc Soc Exp BioI med* 1949. 71.516

**Wilson, Paddock GV** Process for obtaining transfer factor from colostrum transfer factor so obtained and use thereof. US Patent Number 4816563, Mar. 28, 1989

**Lawrence HS** A new basis for the immunoregulatory activities of transfer factor -- an arcane dialect in the language of cells., *Horkowsky W. Cell Immunol* 1983,82, 102-16.

**Kirkpatrick CH** Structural Nature and Function of Transfer Factors, *Annals of the New York Academy of Sciences* 1993, 685, 362-368.

**Pizza G, Visa D, Bouchiex CI, Corrado F.** Effect of in vitro produced transfer factor on the immune response of cancer patients. *Eur J Cancer* 1977, 13, 9 17-23.

**Roda E, Visa D, Pizza G, Mastroberto L, Phillips J, De Vinci c, Barbra L.** Transfer factor for the treatment of HbsAg-positive chronic active hepatitis. *Proc Soc Exp Med* 1985, 178, 468-75.

**Fudenberg HH, Pizza G.** Transfer factor 1993 *New Frontiers. Progress in drug Res.* 1994, 42, 309400.

**Lawrence HS, Borkowsky W** Transfer factor - current status and future prospects.. *Biotherapy* 1996,9(1-3), 1-5.

**Kirkpatrick CH** Activities and characteristics of transfer factors.. Biotherapy 1996, 9, 13-6.

**Marwick C.** Investigators present latest findings on Hong Kong bird flu to the FDA. JAMA 1998, 279, 643-4.

**McManus J.** Questions remain as Hong Kong's avian flu crisis continues. Brit Med J 1998, 316, 91.

**Vogel U.** Sequence offers clues to deadly flu. Science 1998, 279:324.

**Casadevall A, Scharff MD** Return to the past: the case for antibody-based therapies in infectious diseases.. Clinical Infectious Diseases 1995, 21, 150-61.

**Wawrzyniak EJ** Antibody Therapy. Oxford, UK: BIOS Science Publishers Limited, 1995, p9-10.

**Burnie JP, Matthews RC.** The renaissance of antibody therapy. J. Antimicrobial Chemotherapy 1998, 41, 3 19-322.

**Klobasa F, Habe F, Werhahn E. Berl Munch Tierarztl** The absorption of colostrum immunoglobulins in newborn piglets. II. Effect of water or glucose solutions on the permeability of the newborn intestine] Wochenschr 1991, 104, 3741.

**Petschow BW, Talbott RD. J Pediatr** Reduction in virus-neutralizing activity of a bovine colostrum immunoglobulin concentrate by gastric acid and digestive enzymes. Gastroenterol Nutr. 1994, 19, 228-35.

**Wawrzyniak EJ** Antibody Therapy. Oxford, UK BIOS Scientific Publications Limited, 1995, p32.

**Rump JA, Arndt R, Arbold A, Bendick C, Dichtelmuller H, Franke M, Helm EB, Jager H, Kampmann B, Kolb P. et al.** Treatment of diarrhea in human immunodeficiency virus-infected patients with immunoglobulins from bovine colostrum. Clin Investig 1992, 70, 588-94.

**Kirkpatrick CH.** Transfer factors: identification of conserved sequences in transfer factor molecules. Mol Med 2000 Apr;6(4):332-41

**Kirkpatrick CH.** Activities and characteristics of transfer factors. Biotherapy 1996;9(1-3):13-6

**Wong VG, Kirkpatrick CH.** Immunologic reconstitution in a patient with keratoconjunctivitis, superficial candidiasis and hypoparathyroidism: the role of immunocompetent lymphocyte transfusion and transfer factor. Trans Am Ophthalmol Soc 1973;71:254-67; discussion 267-71



**Alvarez-Thull L, Kirkpatrick CH.** Profiles of cytokine production in recipients of transfer factors. *Biotherapy* 1996;9(1-3):55-9

**Rozzo SJ, Kirkpatrick CH.** Purification of transfer factors. *Mol Immunol* 1992 Feb;29(2):167-82

**Kirkpatrick CH.** Transfer factor. *J Allergy Clin Immunol* 1988 May;81(5 Pt 1):803-13

**Pizza G, De Vinci C, Fornarola V, Palareti A, Baricordi O, Viza D.** In vitro studies during long-term oral administration of specific transfer factor. *Biotherapy* 1996;9(1-3):175-85

**Pilotti V, Mastroilli M, Pizza G, De Vinci C, Busutti L, Palareti A, Gozzetti G, Cavallari A.** Transfer factor as an adjuvant to non-small cell lung cancer (NSCLC) therapy. *Biotherapy* 1996;9(1-3):117-21

**Prasad U, bin Jalaludin MA, Rajadurai P, Pizza G, De Vinci C, Viza D, Levine PH.** Transfer factor with anti-EBV activity as an adjuvant therapy for nasopharyngeal carcinoma: a pilot study. *Biotherapy* 1996;9(1-3):109-15

**Ablashi DV, Levine PH, De Vinci C, Whitman JE Jr, Pizza G, Viza D.** Use of anti HHV-6 transfer factor for the treatment of two patients with chronic fatigue syndrome (CFS). Two case reports. *Advanced Biotechnologies Inc., Columbia, MD 21046, USA Biotherapy* 1996;9(1-3):81-6

**Pizza G, Viza D, De Vinci C, Palareti A, Cuzzocrea D, Fornarola V, Baricordi R.** Orally administered HSV-specific transfer factor (TF) prevents genital or labial herpes relapses. *Biotherapy* 1996;9(1-3):67-72

**Pizza G, Chiodo F, Colangeli V, Gritti F, Raise E, Fudenberg HH, De Vinci C, Viza D.** Preliminary observations using HIV-specific transfer factor in AIDS. *Biotherapy* 1996;9(1-3):41-7

**Pizza G, De Vinci C, Fudenberg HH.** Transfer factor in malignancy. *Prog Drug Res* 1994;42:401-21

**Neequaye J, Viza D, Pizza G, Levine PH, De Vinci C, Ablashi DV, Biggar RJ, Nkrumah FK.** Specific transfer factor with activity against Epstein-Barr virus reduces late relapse in endemic Burkitt's lymphoma. *Anticancer Res* 1990 Sep-Oct;10(5A):1183-7

**Kirkpatrick CH.** Structural nature and functions of transfer factors. *Ann N Y Acad Sci* 1993 Jun 23;685:362-8

De Vinci C, Pizza G, Cuzzocrea D, Menniti D, Aiello E, Maver P, Corrado G, Romagnoli P, Dragoni E, LoConte G, Riolo U, Masi M, Severini G, Fornarola V, Viza D. Use of transfer factor for the treatment of recurrent non-bacterial female cystitis (NBRC): a preliminary report. *Biotherapy* 1996;9(1-3):133-8

## Lymphokine-Activated Killer Cells

**Grimm EA et al** Lymphokine-activated killer cells. Induction and function. *Annals of the New York Academy of Science* 532: 380-6 (1988)

**Hiserodt JC** Lymphokine-activated killer cells: biology and relevance to disease. *Cancer Investigations* 11: 420-39 (1993)

**Lindemann A et al** Lymphokine activated killer cells. *Blut* 59: 375-84 (1989)

**Melief CJ** Tumor eradication by adoptive transfer of cytotoxic T lymphocytes. *Advances in Cancer Research* 58: 143-75 (1992)

**Palmer PA et al** Continuous infusion of recombinant interleukin-2 with or without autologous lymphokine activated killer cells for the treatment of advanced renal cell carcinoma. *European Journal of Cancer* 28A: 1038-44 (1992)

**Young JDE and Liu CC** Multiple mechanisms of lymphocyte-mediated killing [Immunology Today](#) 9: 140-4 (1988)

**Ballas ZK and Rasmussen W** Lymphokine-activated killer cells. VII. IL4 induces an NK1.1+CD8 alpha+beta- TCR-alpha beta B220+ lymphokine-activated killer subset. *Journal of Immunology* 150: 17-30 (1993)

**Basse P et al** Tissue distribution of adoptively transferred adherent lymphokine-activated killer cells assessed by different cell labels. *Cancer Immunology Immunother.* 34: 221-7 (1992)

**Caligiuri MA et al** Extended continuous infusion low-dose recombinant interleukin-2 in advanced cancer: prolonged immunomodulation without significant toxicity. *Journal of Clin. Oncol.* 9: 2110-9 (1991)

**Clayman GL et al** Immunomodulation of the induction phase of lymphokine-activated killer activity by acute phase proteins. *Otolaryngol. Head Neck Surg.* 105: 26-34 (1991);

**Colborn D et al** Expansion of lymphokine-activated killer cells for clinical use utilizing a novel culture device [Journal of Immunological Methods](#) 119: 247-54 (1989)

**Crump III WL et al** Synergy of human recombinant interleukin 1 with interleukin 2 in the generation of lymphokine-activated killer cells. *Cancer Research* 49: 149-53 (1989);

- Echarti C and Maurer HR** Lymphokine-activated killer cells: determination of their tumor cytolytic capacity by a clonogenic microassay using agar capillaries [Journal of Immunological Methods](#) 143: 41-7 (1991)
- Ettinghausen SE et al** Haematologic effects of immunotherapy with lymphokine-activated killer cells and recombinant interleukin-2 in cancer patients. *Blood* 69: 1654-60 (1987)
- Finkelstein DM and Miller RG** Effect of culture media on lymphokine-activated killer effector phenotype and lytic capacity. *Cancer Immunology Immunother.* 33: 103-8 (1991)
- Fujimoto T et al** Evaluation of basic procedures for adoptive immunotherapy for gastric cancer. *Biotherapy* 5: 153-63 (1992)
- Galandrini R et al** Adhesion molecule-mediated signals regulate major histocompatibility complex-unrestricted and CD3/T cell receptor-triggered cytotoxicity. *European Journal of Immunology* 22: 2047-53 (1992)
- Gambacorti-Passerini C et al** A pilot phase II trial of continuous-infusion interleukin-2 followed by lymphokine-activated killer cell therapy and bolus-infusion interleukin-2 in renal cancer. *Journal of Immunother.* 13: 43-8 (1993)
- Geller RL et al** Generation of lymphokine-activated killer activity in T cells: Possible regulatory circuits. *Journal of Immunology* 146: 3280-8 (1991)
- Grimm EA et al** TGF-beta inhibits the in vitro induction of lymphokine-activated killing activity. *Cancer Immunology Immunother.* 27: 53-8 (1988)
- Gunji Y et al** Fibrin formation inhibits the in vitro cytotoxic activity of human natural and lymphokine-activated killer cells. *Blood Coagul. Fibrinolysis.* 1: 663-72 (1990);
- Hank JA et al** In vivo induction of the lymphokine-activated killer phenomenon: interleukin-2 dependent human non-major histocompatibility complex-restricted cytotoxicity generated in vivo during administration of human recombinant interleukin-2. *Cancer Research* 48: 1965-71 (1988)
- Herrmann GG et al** LAK-cell-mediated cytotoxicity against tumor cell targets used to monitor the stimulatory effect of interleukin-2: cytotoxicity, target recognition and phenotype of effector cells lysing the Daudi, T24 and K562 tumor cell lines. *Nat. Immun.* 11: 7-16 (1992)
- Iho S et al** Characteristics of interleukin-6-enhanced lymphokine-activated killer cell function. *Cellular Immunology* 135: 66-77 (1991)
- Kasid A et al** Effects of transforming growth factor-beta on human lymphokine-activated killer cell precursors. Autocrine inhibition of cellular proliferation and differentiation to immune killer cells. *Journal of Immunology* 141: 690-8 (1988)

- Kato K et al** Augmentation by tumor necrosis factor alpha of the systemic therapeutic effect of lymphokine-activated killer cells in adoptive immunotherapy of murine tumor. *Japanese Journal of Cancer Research* 82: 464-9 (1991)
- Lazenby AW et al** IL1 synergy with IL2 in the generation of lymphokine activated killer cells is mediated by TNF-alpha and beta lymphotoxin [Cytokine](#) 4: 479-87 (1992);
- Lieberman MD et al** Enhancement of interleukin-2 immunotherapy with L-arginine. *Ann. Surg.* 215: 157-65 (1992)
- Lotze MT et al** Lysis of fresh and cultured autologous tumor by human lymphocytes cultured in T cell growth factor. *Cancer Research* 41: 4420-5 (1981)
- Lotze MT et al** In vivo administration of purified human interleukin-2. II. half-life, immunological effects, and expansion of peripheral lymphoid cells in vivo with recombinant IL2. *Journal of Immunology* 135: 2865-75 (1985)
- Maas RA et al** Mechanisms of tumor regression induced by low doses of interleukin-2. *In vivo* 5: 637-42 (1991)
- Marumo K et al** Enhancement of lymphokine-activated killer activity induction in vitro by interleukin-1 administered in patients with urological malignancies. *Journal of Immunother.* 11: 191-7 (1992)
- Matossian-Rogers A et al** Tumor necrosis factor-alpha enhances the cytolytic and cytostatic capacity of interleukin-2 activated killer cells. *British Journal of Cancer* 59: 573-7 (1989)
- McKenzie RS et al** Identification of a novel CD56- lymphokine-activated killer cell precursor in cancer patients receiving recombinant interleukin 2. *Cancer Research* 52: 6318-22 (1992)
- Mehta S et al** Lymphokine-activated effector cells: modulation of activity by cytokines. *Lymphokine Cytokine Research* 11: 73-7 (1992)
- Melder RJ et al** A new approach to generating antitumor effectors for adoptive immunotherapy using human adherent lymphokine-activated killer cells. *Cancer Research* 48: 3461-9 (1988)
- Miller JS et al** Adherent lymphokine-activated killer cells suppress autologous human normal bone marrow progenitors. *Blood* 77: 2389-95 (1991)
- Mule JJ et al** Transforming growth factor-beta inhibits the in vitro generation of lymphokine-activated killer cells and cytotoxic T cells. *Cancer Immunology Immunother.* 26: 95-100 (1988)
- Murata M et al** Development of a new culture system for human lymphokine-activated killer cells: Comparison with a conventional static culture method. *Cytotechnology* 7: 75-83 (1991)

- Naume B et al** Immunomagnetic isolation of NK and LAK cells [Journal of Immunological Methods](#) 136: 1-9 (1991)
- Naume B et al** Synergistic effects of interleukin 4 and interleukin 12 on NK cell proliferation [Cytokine](#) 5: 38-46 (1993)
- Nishimura T et al** Combination tumor-immunotherapy with recombinant tumor necrosis factor and recombinant interleukin-2 in mice. *International Journal of Cancer* 40: 255-61 (1987)
- Ottonello L et al** Suppression of lymphokine-activated killer (LAK) cell function by neutrophil polymorphonuclear leukocytes. *Journal of Clin. Lab. Immunology* 34: 37-40 (1991)
- Owen-Schaub LB et al** Synergy of tumor necrosis factor and interleukin 2 in the activation of human cytotoxic lymphocytes: effect of tumor necrosis factor alpha and interleukin 2 in the generation of human lymphokine-activated killer cell cytotoxicity. *Cancer Research* 48: 788-92 (1988)
- Papamichail M and Baxevanis CN** gamma-interferon enhances the cytotoxic activity of interleukin-2-induced peripheral blood lymphocyte (LAK) cells, tumor infiltrating lymphocytes (TIL), and effusion associated lymphocytes. *Journal of Chemotherapy* 4: 387-93 (1992)
- Philips JH and Lanier LL** Dissection of the lymphokine-activated killer phenomenon. Relative contribution of peripheral blood natural killer cells and T lymphocytes to cytolysis. *Journal of Experimental Medicine* 164: 814-25 (1986)
- Reiter Z and Taylor MW** Interleukin 2 protects hairy leukemic cells from lymphokine-activated killer cell-mediated cytotoxicity. *Cancer Research* 53: 3555-60 (1993)
- Schoof DD et al** Survival characteristics of metastatic renal cell carcinoma patients treated with lymphokine-activated killer cells plus interleukin-2. *Urology* 41: 534-9 (1993)
- Shimizu K et al** A high density cell culture system for generation of human lymphokine-activated killer (LAK) cells for clinical use in adoptive immunotherapy. *Journal of Clin. Lab. Immunology* 32: 41-7 (1990)
- Shimizu Y et al** Proliferation and cytotoxicity of lectin-induced lymphokine-activated killer (LILAK) cells. *Journal of Gastroenterology and Hepatology* 6: 485-90 (1991);
- Singh KP et al** Protein A potentiates lymphokine-activated killer cell induction in normal and melanoma patient lymphocytes. *Immunopharmacology and Immunotoxicology* 14: 73-103 (1992)
- Sondel PM et al** Destruction of autologous human lymphocytes by interleukin 2-activated cytotoxic cells. *Journal of Immunology* 137: 502-11 (1986)

**Tachibana I et al** Generation of a small cell lung cancer variant resistant to lymphokine-activated killer (LAK) cells: association with resistance to a LAK cell-derived, cytostatic factor. *Cancer Research* 52: 3310-6 (1992)

**Wersall P et al** Simplified long term large scale production of highly active human LAK cells for therapy. *Medical Oncology and Tumor Pharmacotherapy* 7: 257-63 (1990);

**Yannelli JR** The preparation of effector cells for use in the adoptive cellular immunotherapy of human cancer [Journal of Immunological Methods](#) 139: 1-16 (1991)

## Neutrophils

**Roth, J.A.** "Enhancement of Neutrophil Function by Ultra filtered Bovine Whey", *J. Dairy Sci.* 84:824-829, Vol. 84, No.4, 2001.

**Gudmundsson GH, Agerberth B.** *J Immunol Methods* 1999 Dec 17;232(1-2):45-54  
Neutrophil antibacterial peptides, multifunctional effector molecules in the mammalian immune system.

**Chaly YV, Paleolog EM, Kolesnikova TS, Tikhonov II, Petratchenko EV, Voitenok NN.** *Eur Cytokine Netw* 2000 Jun;11(2):257-66  
Neutrophil alpha-defensin human neutrophil peptide modulates cytokine production in human monocytes and adhesion molecule expression in endothelial cells.

## Granulins

**Bateman A et al** Granulins, a novel class of peptide from leukocytes. *Biochemical and Biophysical Research Communications* 173: 1161-8 (1990)

**Belcourt DR et al** Isolation and primary structure of the three major forms of granulin-like peptides from hematopoietic tissues of a teleost fish (*Cyprinus carpio*). *Journal of Biological Chemistry* 268(13): 9230-9237 (1993)

**Belcourt DR et al** Immunocytochemical localization of granulin-1 to mononuclear phagocytic cells of the teleost fish *Cyprinus carpio* and *Carassius auratus*. *Journal of Leukocyte Biology* 57(1): 94-100 (1995)

**Bhandari V et al** Isolation and sequence of the granulin precursor cDNA from human bone marrow reveals tandem cysteine-rich granulin domains. *Proceedings of the National Academy of Science (USA)* 89: 1715-9 (1992)

**Bhandari V and Bateman A** Structure and chromosomal location of the human granulin gene. *Biochemical and Biophysical Research Communications* 188: 57-63 (1992)

**Liau LM et al** Identification of a human glioma-associated growth factor gene, granulin, using differential immuno-absorption. *Cancer Research* 60(5): 1353-60 (2000)

**Sparro G et al** Isolation and N-terminal sequence of multiple forms of granulins in human urine. *Protein Expression and Purification* 1997 Jul;10(2):169-74 (1997)

**Trinh DP et al** Epithelin/granulin growth factors: extracellular cofactors for HIV-1 and HIV-2 Tat proteins. *Biochemical Biophysical Research Communications* 256(2): 299-306 (1999)

**Zanocco-Marani T** Biological activities and signaling pathways of the granulin/epithelin precursor. *Cancer Research* 1999 59(20): 5331-40 (1999)

## Perforins

**Acha-Orbea H et al** Inhibition of lymphocyte mediated cytotoxicity by perforin antisense oligonucleotides [EMBO Journal](#) 12: 3815-9 (1990)

**Fink TM et al** Human perforin (PRF1) maps to 10q22, a region that is syntenic with mouse chromosome 10. *Genomics* 13: 1300-2 (1992)

**Hameed A et al** Immunohistochemical identification of cytotoxic lymphocytes using human perforin monoclonal antibody. *American Journal of Pathology* 140: 1025-30 (1992)

**Henkart PA** Mechanisms of lymphocyte-mediated cytotoxicity. *Annual Review of Immunology* 3: 31-58 (1985)

**Lichtenheld MG** Structure and function of human perforin *Nature (London)* 335: 448-51 (1988)

**Lichtenheld MG et al** Structure of the human perforin gene: a simple gene organization with interesting potential regulatory sequences. *Journal of Immunology* 143: 4267-74 (1989)

**Liu CC** Identification and characterization of a pore-forming protein of human peripheral blood natural killer cells. *Journal of Experimental Medicine* 164: 2061-76 (1986)

**Lowrey DM et al** Isolation and characterization of cytotoxic granules from human lymphokine (interleukin 2) activated killer cells. *Cancer Research* 48: 4681-8 (1988)

**Lu P et al** Perforin expression in human peripheral blood mononuclear cells. Definition of an IL2-independent pathway of perforin induction in CD8 + T cells. *Journal of Immunology* 148: 3354-60 (1992)

**Masson D and Tschopp J** Isolation of a lytic, pore-forming protein (perforin) from cytolytic T lymphocytes. *Journal of Biological Chemistry* 260: 9069-72 (1985)

**Ojcius DM and Young JDE** Cytolytic pore-forming proteins and peptides: is there a common structural motif [Trends in Biochemical Sciences](#) 16: 225-9 (1991)

**Podack ER** Molecular mechanisms of lymphocyte-mediated tumor cell lysis [Immunology Today](#) 6: 21-7 (1985)

**Podack ER et al** Structure, function and expression of murine and human perforin 1 (P1). *Immunological Reviews* 103: 203-11 (1988)

**Podack ER et al** Isolation and biochemical and functional characterization of perforin 1 from cytolytic T cell granules. *Proceedings of the National Academy of Science (USA)* 82: 8629-33 (1985)

**Podack ER et al** A central role of perforin in cytotoxicity? *Annual Review of Immunology* 9: 129-57 (1991)

**Podack ER and Kupfer A** T cell effector functions: mechanisms for delivery of cytotoxicity and help. *Annual Review of Cell Biology* 7: 479-504 (1991)

**Shinkai Y et al** Molecular cloning and chromosomal assignment of the human perforin (PFP) gene. *Immunogenetics*. 30: 452-7 (1989)

**Smyth MJ et al** IL2 and IL6 synergise to augment the pore-forming protein gene expression and cytotoxic potential of human peripheral blood T cells. *Journal of Immunology* 145: 1156-66 (1990)

**Trapani JA et al** Genomic organization of the mouse pore-forming protein (perforin) gene and localization to chromosome 10: similarities to and differences from C9. *Journal of Experimental Medicine* 171: 545-57 (1990)

**Young JDE and Cohn ZA** Cellular and humoral mechanisms of cytotoxicity: structural and functional analogies. *Advances in Immunology* 41: 269-332 (1987)

**Young JDE et al** Properties of a purified pore-forming protein (perforin 1) isolated from H2-restricted cytotoxic T cell granules. *Journal of Experimental Medicine* 164: 144-55 (1986)

**Young JDE et al** Purification and characterization of a cytolytic pore-forming protein from granules of cloned lymphocytes with natural killer activity. *Cell* 44: 849-59 (1986)

**Zalman LS et al** The cytolytic protein of human lymphocytes related to the ninth component (C9) of human complement: isolation from anti-CD3-activated peripheral blood mononuclear cells. *Proceedings of the National Academy of Science (USA)* 84: 2426-9 (1987)



# Chemokines

**Baggiolini M et al** Human chemokines: an update. *Annual Review of Immunology* 15: 675-705 (1997)

**Jahnz-Rozyk K** Chemokines - New markers of inflammation. *International Review of Allergology and Clinical Immunology* 4(4): 143-149 (1998)

**Luther SA and Cyster JG** Chemokines as regulators of T cell differentiation. *Nature Immunology* 2(2): 102-7 (2001)

**Mackay CR** Chemokines: what chemokine is that? *Current Biology* 7(6): R384-386 (1997)

**Mahalingam S et al** Antiviral potential of chemokines. *Bioessays* 23(5): 428-35 (2001);

**Miller MD and Krangel MS** Biology and biochemistry of the chemokines: a family of chemotactic and inflammatory cytokines. *Critical Review of Immunology* 12: 17-46 (1992)

**Moser B et al** Lymphocyte responses to chemokines. *International Review of Immunology* 16(3-4): 323-344 (1998)

**Moser B and Loetscher P** Lymphocyte traffic control by chemokines. *Nature Immunology* 2(2): 123-8 (2001)

**Oppenheim JJ et al** Properties of the novel proinflammatory supergene "intercrine" cytokine family. *Annual Review of Immunology* 9: 617-648 (1991)

**Proudfoot AE et al** The strategy of blocking the chemokine system to combat disease. *Immunological Reviews* 177: 246-56 (2000)

**Rossi D and Zlotnik A** The biology of chemokines and their receptors. *Annual Reviews of Immunology* 2000; 18:217-42 (2000)

**Wang JM et al** Chemokines and their role in tumor growth and metastasis [Journal of Immunological Methods](#) 220(1-2): 1-17 (1998)

**Yoshie O et al** Chemokines in immunity. *Advances in Immunology* 2001; 78: 57-110 (2001)

**Zlotnik A et al** Recent advances in chemokines and chemokine receptors. *Critical Reviews of Immunology* 19(1): 1-47 (1999)

# Minicytokines

**Aizawa S et al** Biological activities of tetrapeptide AcSDKP on hemopoietic cell binding to the stromal cell in vitro. *Experimental Hematology* 20: 896-899 (1992)

**Deeg HJ et al** In vivo radioprotective effect of AcSDKP on canine myelopoiesis. *Annals of Hematology* 74(3): 117-122 (1997)

**Genevay MC et al** The synthetic tetrapeptide AcSDKP protects cells that reconstitute long-term bone marrow stromal cultures from the effects of mafosfamide (Asta Z 7654). *Experimental Hematology* 24(1): 77-81 (1996)

**Grillon C et al** Involvement of thymosin beta 4 and endoprotease Asp-N in the biosynthesis of the tetrapeptide AcSerAspLysPro a regulator of the hematopoietic system. *FEBS Letters* 274: 30-34 (1990)

**Grillon C et al** Optimization of cell culture conditions for the evaluation of the biological activities of the tetrapeptide N-Acetyl-Ser-Asp-Lys-Pro, a natural hemoregulatory factor. *Growth Factors* 9: 133-138 (1993)

**Guigon M et al** Inhibition of human bone marrow progenitors by the synthetic tetrapeptide AcSDKP. *Experimental Hematology* 18: 1112-1115 (1990)

**Huang WQ and Wang QR** Bone marrow endothelial cells secrete thymosin beta4 and AcSDKP. *Experimental Hematology* 2001 Jan;29(1):12-8 (2001)

**Jackson JD et al** Activity of acetyl-n-ser-asp-lys-pro (AcSDKP) on hematopoietic progenitor cells in short-term and long-term murine bone marrow cultures. *Experimental Hematology* 24(3): 475-481 (1996)

**Jackson JD et al** Activity of acetyl-Ser-Asp-Lys-Pro (AcSDKP) on human hematopoietic progenitor cells in short-term and long-term bone marrow cultures. *Journal of Hematotherapy and Stem Cell Research* 9(4):489-96 (2000)

**Lenfant M et al** Inhibitor of hematopoietic pluripotent stem cell proliferation: purification and determination of its structure. *Proceedings of the National Academy of Science (USA)* 86: 779-782 (1989)

**Rousseau A et al** The hemoregulatory peptide N-acetyl-Ser-Asp-Lys-Pro is a natural and specific substrate of the N-terminal active site of human angiotensin-converting enzyme. *Journal of Biological Chemistry* 270(8): 3656-3661 (1995)

**Thierry J et al** Synthesis and biological evaluation of analogues of the tetrapeptide N-Acetyl-Ser-Asp-Lys-Pro (AcSDKP), an inhibitor of primitive haematopoietic cell proliferation. *Journal of Peptide Science* 7(5): 284-93 (2001)

**Watanabe T et al** In vivo haemoprotective activity of tetrapeptide AcSDKP combined with granulocyte-colony stimulating factor following sublethal irradiation. *British Journal of Haematology* 94(4): 619-627 (1996)

**Wierenga PK** Purging of acute myeloid leukaemia cells from stem cell grafts by hyperthermia: enhancement of the therapeutic index by the tetrapeptide AcSDKP and the alkyl-lysophospholipid ET-18-OCH(3). *British Journal of Haematology* 111(4):1145-52 (2000)

## Proopiomelanocortin

**Benjannet S et al** PC1 and PC2 are proprotein convertases capable of cleaving proopiomelanocortin at distinct pairs of basic residues. *Proceedings of the National Academy of Science (USA)* 88: 3564-8 (1991)

**Chang ACY et al** Structural organization of human genomic DNA encoding the pro-opiomelanocortin peptide. *Proceedings of the National Academy of Science (USA)* 77: 4890-4894 (1980)

**Cochet M et al** Characterization of the structural gene and putative 5-prime-regulatory sequences for human proopiomelanocortin *Nature (London)* 297: 335-339 (1982);

**Chretien M et al** From beta-lipotropin to beta-endorphin and 'pro-opio-melanocortin.' *Canadian Journal of Biochemistry* 57: 1111-1121 (1979)

**Eipper BA and Mains RE** Structure and biosynthesis of pro- adrenocorticotropin-endorphin and related peptides. *Endocrine Rev.* 1: 1-27 (1980)

**Jones MT and Gilham B** Factors involved in the regulation of adrenocorticotropic hormone/b lipotropic hormone. *Physiol. Rev.* 68: 743-818 (1988)

**Kraus J et al** Regulatory elements of the human proopiomelanocortin gene promoter. *DNA and Cell Biology* 12: 527-36 (1993)

**Loh VP et al** Intracellular trafficking and processing of pro-opiomelanocortin. *Cell Biophys.* 19: 73-83 (1991)

**Mains RE and Eipper BA** The tissue-specific processing of pro-ACTH/endorphin: Recent advances and unsolved problems. *Trends Endocrinol. Metab.* 1: 388-94 (1990);

**Monig H et al** Structure of the POMC promoter region in pituitary and extrapituitary ACTH producing tumors. *Experimental Clin. Endocrinol.* 101: 36-8 (1993)

**Nakai Y et al** Molecular mechanisms of glucocorticoid inhibition of human proopiomelanocortin gene transcription. *Journal of Steroid Biochemistry and Molecular Biology* 40: 301-6 (1991)

**Riegel AT et al** Proopiomelanocortin gene promoter elements required for constitutive and glucocorticoid-repressed transcription. *Molecular Endocrinology* 5: 1973-82 (1991);

**Roberts JL et al** Regulation of pituitary proopiomelanocortin gene expression. In: Herz A (ed) Handbook of Experimental Pharmacology 104/I: 347-77, Springer, Berlin (1993);

**Sacerdote P et al** Pharmacological modulation of neuropeptides in peripheral mononuclear cells. Journal of Neuroimmunol. 32: 35-41 (1991)

**Sharp B and Linner K** What do we know about the expression of proopiomelanocortin transcripts and related peptides in lymphoid tissue? Endocrinology 133: 1921A-21B (1993)

**Therrien M and Drouin J** Molecular determinants for cell specificity and glucocorticoid repression of the proopiomelanocortin gene. Annals of the New York Academy of Science 680: 663-71 (1993)

**Van Woudenberg AD et al** Analysis of proopiomelanocortin (POMC) messenger ribonucleic acid and POMC-derived peptides in human peripheral blood mononuclear cells: no evidence for a lymphocyte-derived POMC system. Endocrinology 133: 1922-33 (1993)

**Alvarez-Mon M et al** ACTH: A potential role for adrenocorticotropin in regulating human B lymphocyte functions. Journal of Immunology 135: 3823-6 (1985)

**Bennett HPJ et al** Confirmation of the 1-20 amino acid sequence of human adrenocorticotropin. Biochemical Journal 133: 11-13 (1973)

**Brooks KH** Adrenocorticotropin (ACTH) functions as a late-acting B cell growth factor and synergizes with interleukin 5. Journal of Mol. Cell. Immunology 4: 327-35 (1990);

**Carr DJJ et al** Corticotropin-releasing hormone augments natural killer cell activity through a naloxone-sensitive pathway. Journal of Neuroimmunol. 28: 53-61 (1990);

**Gatti G et al** Interplay in vitro between ACTH, beta-endorphin, and glucocorticoids in the modulation of spontaneous and lymphokine-inducible human natural killer (NK) cell activity. Brain Behav. Immunology 7: 16-28 (1993)

**Johnson HM et al** Regulation of lymphokine gamma-interferon production by corticotropin. Journal of Immunology 132: 246-50 (1984)

**Karanth S and McCann SM** Anterior pituitary hormone control by interleukin 2. Proceedings of the National Academy of Science (USA) 88: 2961-5 (1991)

**McGillis JP et al** Stimulation of rat B lymphocyte proliferation by corticotropin-releasing factor. Journal of Neuroscience Research 23: 346-52 (1989)

**Lee TH et al** On the structure of human corticotropin (adrenocorticotropic hormone). Journal of Biological Chemistry 236: 2970-2974 (1961)

**McGlone JJ et al** Adrenocorticotropin stimulates natural killer cell activity. Endocrinology 129: 1653-8 (1991)

**Mesiano S et al** Basic fibroblast growth factor expression is regulated by corticotropin in the human fetal adrenal: A model for adrenal growth regulation. *Proceedings of the National Academy of Science (USA)* 88: 5428-32 (1991)

**Ohgo S et al** Interleukin-1 (IL1) stimulates the release of corticotropin-releasing factor (CRF) from superfused rat hypothalamo-neurohypophyseal complexes (HNC) independently of the histaminergic mechanism. *Brain Research* 558: 217-23 (1991);

**Owens MJ and Nemeroff CB** Physiology and pharmacology of corticotropin-releasing factor. *Pharmacol. Rev.* 43: 425-73 (1991)

**Plotsky PM et al** Central activin administration modulates corticotropin-releasing hormone and adrenocorticotropin secretion. *Endocrinology* 128: 2520-5 (1991)

**Smith EM et al** Corticotropin releasing factor induction of leukocyte-derived immunoreactive ACTH and endorphins *Nature (London)* 322: 881-2 (1986)

**Singh VK** Stimulatory effect of corticotropin-releasing neurohormone on human lymphocyte proliferation and interleukin 2 receptor expression. *Journal of Neuroimmunol.* 23: 257-62 (1989)

**Suda T et al** Interleukin-1 stimulates corticotropin-releasing factor gene expression in rat hypothalamus. *Endocrinology* 126: 1223-8 (1990)

**Webster EL et al** Upregulation of interleukin-1 receptors in mouse AtT-20 pituitary tumor cells following treatment with corticotropin-releasing factor. *Endocrinology* 129: 2796-8 (1991)

**Yamashiro D and Li CH** Adrenocorticotropins. 44. Total synthesis of the human hormone by the solid-phase method. *Journal of Am. Chem. Soc.* 95: 1310-1315 (1973)

**MSH: Brown SL et al** Suppression of T lymphocyte chemotactic factor production by the opioid peptides beta-endorphin and Met-enkephalin. *Journal of Immunology* 134: 3384-90 (1985)

**Harris JI** Structure of a melanocyte-stimulating hormone from the human pituitary gland *Nature (London)* 184: 167-169 (1959)

**Jegou S et al** Regulation of alpha-melanocyte-stimulating hormone release from hypothalamic neurons. *Annals of the New York Academy of Science* 680: 260-78 (1993)

**Leu SJC and Singh VK** Modulation of natural killer cell-mediated lysis by corticotropin-releasing neurohormone. *Journal of Neuroimmunol.* 33: 253-60 (1991);

**Martin LW et al** Neuropeptide alpha-MSH antagonizes IL6- and TNF-induced fever. *Peptides* 12: 297-9 (1991)

**Mason MJ and Van Epps DE** Modulation of interleukin 1, tumor necrosis factor, and C5a-mediated neutrophil migration by alpha-melanocyte stimulating hormone (MSH). *Journal of Immunology* 142: 1646-51 (1989)

- Nordlund JJ** alpha-Melanocyte-stimulating hormone: A ubiquitous cytokine with pigmenting effects. *JAMA* 266: 2753-4 (1991)
- Smith EM et al** Immunosuppressive effects of corticotropin and melanotropin and their possible significance in human immunodeficiency virus infection. *Proceedings of the National Academy of Science (USA)* 89: 782-6 (1992)
- Taylor AW et al** Identification of alpha-melanocyte stimulating hormone as a potential immunosuppressive factor in aqueous humor. *Curr. Eye Research* 11: 1199-206 (1992);
- Uehara Y et al** Carboxyl-terminal tripeptide of alpha-melanocyte-stimulating hormone antagonizes interleukin-1-induced anorexia. *European Journal of Pharmacol.* 220: 119-22 (1992)
- Villar M et al** Central and peripheral actions of alpha-MSH in the thermoregulation of rats. *Peptides* 12: 1441-3 (1991)
- Endorphins: Chiappelli F et al** Differential effect of beta-endorphin on three human cytotoxic cell populations. *International Journal of Immunopharmacology* 13: 291-7 (1991)
- Davis TP and Crowell SL** beta-Endorphin is metabolized in vitro by human small lung cancer to gamma-Endorphin which stimulates clonal growth. In: *Moody TW (ed), Growth Factors, Peptides and Receptors*, pp 389-400, Plenum Press New York (1993);
- Faith RE et al** Neuroimmunomodulation with enkephalins: enhancement of human natural killer (NK) cell activity in vitro. *Clin. Immunology Immunopharmacol.* 31: 412-8 (1984)
- Garcia I et al** beta-endorphin inhibits interleukin-2 release and expression of interleukin-2 receptors in concanavalin A-stimulated splenic lymphocytes. *Lymphokine Cytokine Research* 11: 339-45 (1992)
- Gilman SC et al** beta-Endorphin enhances lymphocyte proliferative responses. *Proceedings of the National Academy of Science (USA)* 79: 4226-30 (1982)
- Gilmore W and Weiner LP** beta-endorphin enhances interleukin (IL2) production in murine lymphocytes. *Journal of Neuroimmunol.* 18: 125-8 (1988)
- Gilmore W et al** The enhancement of polyclonal T cell proliferation by beta-endorphin. *Brain Research Bull.* 24: 687-92 (1990)
- Hemmick LM and Bidlack JM** Endorphin peptides enhance mitogen-induced T cell proliferation which has been suppressed by prostaglandins. *Advances in Experimental Medicine and Biology* 288: 211-4 (1991)
- Hemmick L and Bidlack JM** beta-Endorphin stimulates rat T lymphocyte proliferation. *Journal of Neuroimmunol.* 29: 239-48 (1990)

**Kay N et al** Interaction between endogenous opioids and IL2 on PHA-stimulated human lymphocytes. *Immunology* 70: 485-91 (1990)

**Mathews PM et al** Enhancement of natural cytotoxicity by beta-endorphin. *Journal of Immunology* 13: 1658-62 (1983)

**McCain HW et al** beta-Endorphin modulates human immunity via non-opiate receptor mechanisms. *Life Sci.* 31: 1619-24 (1982)

**Morgano A et al** Expression of HLA class II antigens and proliferative capacity in autologous mixed lymphocyte reactions of human T lymphocytes exposed in vitro to alpha-endorphin. *Brain Behav. Immun.* 3: 214-22 (1989)

**Oleson DR and Johnson DR** Regulation of human natural cytotoxicity by enkephalins and selective opiate agonists. *Brain Behav. Immunology* 2: 171-86 (1988)

**Peterson PK et al** Opioid-mediated suppression of interferon-gamma production by cultured peripheral blood mononuclear cells. *Journal of Clinical Investigation* 80: 824-31 (1987)

**Van den Bergh P et al** Two opposing modes of action of beta-endorphin on lymphocyte function. *Immunology* 72: 537-43 (1991)

**Van den Bergh P et al** Identification of two moieties of beta-endorphin with opposing effects on rat T-cell proliferation. *Immunology* 79: 18-23 (1993)

**Van Epps DE and Saland L** beta-Endorphin and Met-enkephalin stimulate human peripheral blood mononuclear cell chemotaxis. *Journal of Immunology* 132: 3046-53 (1984)

**Helseth A et al** Transgenic mice that develop pituitary tumors. A model for Cushing's disease. *American Journal of Pathology* 140: 1071-80 (1992)

**Muglia LJ et al** Expression of the mouse corticotropin-releasing hormone gene in vivo and targeted inactivation in embryonic stem cells. *Journal of Clinical Investigation* 93: 2066-72 (1994)

**Stenzel-Poore MP** Development of Cushing's syndrome in corticotropin-releasing factor transgenic mice. *Endocrinology* 130: 3378-86 (1992)

**Tremblay Y et al** Pituitary-specific expression and glucocorticoid regulation of a proopiomelanocortin fusion gene in transgenic mice. *Proceedings of the National Academy of Science (USA)* 85: 8890-4 (1988)

# Heparin Binding Protein (CAP37)

**Almeida RP et al** Complementary DNA sequence of human neutrophil azurocidin, an antibiotic with extensive homology to serine proteases. *Biochemical and Biophysical Research Communications* 177: 688-95 (1991)

**Campanelli D et al** Azurocidin and a homologous serine protease from neutrophils: differential antimicrobial and proteolytic properties. *Journal of Clinical Investigation* 85: 904-15 (1990)

**Heinzelmann M et al** Endocytosis of heparin-binding protein (CAP37) is essential for the enhancement of lipopolysaccharide-induced TNF-alpha production in human monocytes. *Journal of Immunology* 162(7): 4240-5 (1999)

**Morgan JG et al** Cloning of the cDNA for the serine protease homologue CAP37/azurocidin, a microbicidal and chemotactic protein from human granulocytes. *Journal of Immunology* 147: 3210-4 (1991)

**Pereira HA et al** CAP37, a human neutrophil-derived chemotactic factor with monocyte specific activity. *Journal of Clinical Investigation* 85: 1468-76 (1990)

**Pohl J et al** Amino acid sequence of CAP37, a human neutrophil granule-derived antibacterial and monocyte-specific chemotactic glycoprotein structurally similar to neutrophil elastase. *FEBS Letters* 272: 200-4 (1990)

**Rasmussen PB et al** Characterization of recombinant human hbp/cap37/azurocidin, a pleiotropic mediator of inflammation enhancing lps induced cytokine release from monocytes. *FEBS Letters* 390(1): 109-112 (1996)

**Wilde CG et al** Characterization of two azurophil granule proteases with active-site homology to neutrophil elastase. *Journal of Biological Chemistry* 265: 2038-41 (1990);

**Zimmer M et al** Three human elastase-like genes coordinately expressed in the myelomonocyte lineage are organized as a single genetic locus on 19pter. *Proceedings of the National Academy of Science (USA)* 89: 8215-9 (1992)

# Bombesin

**Bevis CL and Zasloff M** Peptides from frog skin. *Annual Review of Biochemistry* 59: 395-414 (1990)

**Castiglione R de and Gozzini L** Non-mammalian peptides: structure determination synthesis, and biological activity. *Chimicaoggi* April 1991, pp. 9-15

**Rozenfurt E** Neuropeptides as cellular growth factors: Role of multiple signaling pathways. *European Journal of Clinical Investigation* 21: 123-34 (1991)



**Schüller HM** Receptor-mediated mitogenic signals and lung cancer. *Cancer Cells* 3: 496-503 (1991)

**Woll P and Rozenfurt E** Neuropeptides as growth regulators. *British Medical Bulletin* 45: 492-505 (1989)

**Lévesque A et al** Synthesis of bombesin analogs by the Fmoc method. *Advances in Cancer Research* 11: 2215-22 (1991)

**Shipp MA et al** CD10/neutral endopeptidase 24. 11 hydrolyses bombesin-like peptides and regulates the growth of small cell carcinomas of the lung. *Proceedings of the National Academy of Science (USA)* 88: 10662-6 (1991)

**Batley J and Wada E** Two distinct receptor subtypes for mammalian bombesin-like peptides. *Trends in Neurological Sciences* 14: 524-8 (1991)

**Batley J et al** Molecular cloning of the bombesin/gastrin-releasing peptide precursor from Swiss 3T3 cells. *Proceedings of the National Academy of Science (USA)* 88: 395-9 (1991)

**Corjay MH et al** Two distinct bombesin receptor subtypes are expressed and functional in human lung carcinoma cells. *Journal of Biological Chemistry* 266: 18771-9 (1991);

**Houben H and Deneff C** Bombesin receptor antagonists and their use in the evaluation of paracrine and autocrine intercellular communication. *Front. Horm. Res.* 19: 176-95 (1991)

**Kane MA et al** Isolation of the bombesin/gastrin-releasing peptide receptor from human small cell lung carcinoma NCI-H345 cells. *Journal of Biological Chemistry* 266: 9486-93 (1991)

**Rozenfurt E and Sinnott-Smith J** Bombesin stimulation of fibroblast mitogenesis: specific receptors, signal transduction, and early events. *Philosophical Transactions of the Royal Society London. Biol.* 327: 209-21 (1990)

**Rozenfurt E et al** Mitogenic signaling through the bombesin receptor: Role of a guanine nucleotide regulatory protein. *JCS* 13: s43-s56 (1990)

**Shapira H et al** Distinguishing bombesin receptor subtypes using the oocyte assay. *Biochemical and Biophysical Research Communications* 176: 79-86 (1991)

**Zachary I and Rozenfurt E** High affinity receptors for peptides of the bombesin family in Swiss 3T3 cells. *Proceedings of the National Academy of Science (USA)* 82: 7616-20 (1985)

**Zachary I et al** Bombesin, vasopressin, and endothelin rapidly stimulate tyrosine phosphorylation in intact Swiss 3T3 cells. *Proceedings of the National Academy of Science (USA)* 88: 4577-81 (1991)

- Carney DN et al** Bombesin is an autocrine growth factor for human small cell lung cancer cell lines. *Proc. Am. Fed. Clin. Res.* 31: 404 (1983)
- Cuttitta F et al** Bombesin-like peptides can function as autocrine growth factors in human small-cell lung cancer *Nature (London)* 316: 823-6 (1985)
- Endo T et al** Bombesin and bradykinin increase inositol phosphates and cytosolic free Ca<sup>2+</sup>, and stimulate DNA synthesis in human endometrial stromal cells. *Journal of Endocrinology* 131: 313-8 (1991)
- Isonishi S et al** Modulation of cisplatin sensitivity and growth rate of an ovarian carcinoma cell line by bombesin and tumor necrosis factor-alpha. *Journal of Clinical Investigation* 90: 1436-42 (1992)
- Johnson TC and Sharifi BG** Abrogation of the mitogenic activity of bombesin by a cell surface sialoglycopeptide growth inhibitor. *Biochemical and Biophysical Research Communications* 161: 468-74 (1989)
- Lemaire I** Bombesin-related peptides modulate interleukin-1 production by alveolar macrophages. *Neuropeptides* 20: 217-23 (1991)
- Narayan S et al** A potent bombesin receptor antagonist inhibits bombesin-stimulated growth of mouse colon cancer cells in vitro: absence of autocrine effects. *Cell Growth and Differentiation* 3: 111-8 (1992)
- Nelson J et al** Bombesin stimulates proliferation of human breast cancer cells in culture. *British Journal of Cancer* 63: 933-6 (1991)
- Radulovic S et al** Inhibition of growth of HT-29 human colon cancer xenografts in nude mice by treatment with bombesin/gastrin releasing peptide antagonist (RC-3095). *Cancer Research* 51: 6006-9 (1991)
- Rozenfurt E and Sinnott-Smith J** Bombesin stimulation of DNA synthesis and cell division of Swiss 3T3 cells. *Proceedings of the National Academy of Science (USA)* 80: 2936-40 (1983)
- Schrey MP et al** Bombesin and glucocorticoids stimulate human breast cancer cells to produce endothelin, a paracrine mitogen for breast stromal cells. *Cancer Research* 52: 1786-90 (1992)
- Sehti T et al** Growth of small cell lung cancer cells: stimulation by multiple neuropeptides and inhibition by broad spectrum antagonists in vitro and in vivo. *Cancer Research* 52: 2737s-42s (1992)
- Willey JC et al** Bombesin and the C-terminal tetradecapeptide of gastrin-releasing peptide are growth factors for human bronchial epithelial cells. *Experimental Cell Research* 153: 245-8 (1984)
- Woll PJ and Rozenfurt E** Bombesin and bombesin antagonists: studies in Swiss 3T3 cells and human small cell lung cancer. *British Journal of Cancer* 57: 579-86 (1988)

**Woll PJ and Rozengurt E** Two classes of antagonist interact with receptors for the mitogenic neuropeptides bombesin, bradykinin, and vasopressin. *Growth Factors* 1: 75-83 (1988)

**Yano T et al** Stimulation by bombesin and inhibition by bombesin/gastrin-releasing peptide antagonist RC-3095 of growth of human breast cancer cell lines. *Cancer Research* 52: 4545-7 (1992)

## **Bradykinin**

**Bevis CL and Zasloff M** Peptides from frog skin. *Annual Review of Biochemistry* 59: 395-414 (1990)

**Castiglione R de and Gozzini L** Non-mammalian peptides: structure determination synthesis, and biological activity. *Chimicaoggi* April 1991, pp. 9-15

**Rozengurt E** Neuropeptides as cellular growth factors: Role of multiple signaling pathways. *European Journal of Clinical Investigation* 21: 123-34 (1991)

**Schüller HM** Receptor-mediated mitogenic signals and lung cancer. *Cancer Cells* 3: 496-503 (1991)

**Woll P and Rozengurt E** Neuropeptides as growth regulators. *British Medical Bulletin* 45: 492-505 (1989)

**Burch RM and Kyle DJ** Recent developments in the understanding of bradykinin receptors. *Life Sci.* 50: 829-38 (1992)

**Hess JF et al** Cloning and pharmacological characterization of a human bradykinin (BK-2) receptor. *Biochemical and Biophysical Research Communications* 184: 260-8 (1992);

**Phillips E et al** Expression of functional bradykinin receptors in *Xenopus* oocytes. *Journal of Neurochemistry* 58: 243-9 (1992)

**Bunn PA Jr et al** Neuropeptide signal transduction in lung cancer: Clinical implications of bradykinin sensitivity and overall heterogeneity. *Cancer Research* 52: 24-31 (1992);

**Bush AB et al** Nerve growth factor potentiates bradykinin-induced calcium influx and release in PC12 cells. *Journal of Neurochemistry* 57: 562-74 (1991)

**Endo T et al** Bombesin and bradykinin increase inositol phosphates and cytosolic free Ca<sup>2+</sup>, and stimulate DNA synthesis in human endometrial stromal cells. *Journal of Endocrinology* 131: 313-8 (1991)

**Francel PC** Bradykinin and neuronal injury. *Journal of Neurotrauma* 9: S27-S45 (1992);

**Godin C et al** Bradykinin stimulates DNA synthesis in competent Balb/c 3T3 cells and enhances inositol phosphate formation induced by platelet-derived growth factor. *Biochemical Pharmacology* 42: 117-22 (1991)

**Lerner UH** Bradykinin synergistically potentiates interleukin-1 induced bone resorption and prostanoid biosynthesis in neonatal mouse calvarial bones. *Biochemical and Biophysical Research Communications* 175: 775-83 (1991)

**Lerner UH and Mod er T** Bradykinin B1 and B2 receptor agonists synergistically potentiate interleukin-1-induced prostaglandin biosynthesis in human gingival fibroblasts. *Inflammation* 15: 427-36 (1991)

**Patel KV and Schrey MP** Inhibition of DNA synthesis and growth in human breast stromal cells by Evidence for independent roles of B1 and B2 receptors in the respective control of cell growth and phospholipid hydrolysis. *Cancer Research* 52: 334-40 (1992);

**Sethi T and Rozenfurt E** Multiple neuropeptides stimulate clonal growth of small cell lung cancer: effects of bradykinin, vasopressin, cholecystokinin, galanin, and neurotensin. *Cancer Research* 51: 3621-3 (1991)

**Skidgel RA et al** Metabolism of substance P and bradykinin by human neutrophils. *Biochemical Pharmacology* 41: 1335-44 (1991)

**Woll PJ and Rozenfurt E** Two classes of antagonist interact with receptors for the mitogenic neuropeptides bombesin, bradykinin, and vasopressin. *Growth Factors* 1: 75-83 (1988)

**Vandekerckhove F et al** Bradykinin induces interleukin-6 and synergizes with interleukin-1. *Lymphokine Cytokine Research* 10: 285-9 (1991)

## **Epidermal Inhibitory Pentapeptide**

**Bramucci M et al** Epidermal inhibitory pentapeptide phosphorylated in vitro by calf thymus protein kinase NII is protected from serum enzyme hydrolysis. *Biochemical and Biophysical Research Communications* 183: 474-80 (1992)

**Elgjo K et al** Inhibitory epidermal pentapeptide modulates proliferation and differentiation of transformed mouse epidermal cells in vitro. *Virchows Arch. B. Cell. Pathol.* 60: 161-4 (1991)

**Elgjo K and Reichelt KL** Structure and function of growth inhibitory epidermal pentapeptide. *Annals of the New York Academy of Science* 548: 197-203 (1988)

**Olson WM and Elgjo K** UVB-induced epidermal hyperproliferation is modified by a single, topical treatment with a mitosis inhibitory epidermal pentapeptide. *Journal of Investigative Dermatology* 94: 101-6 (1990)

**Robinson P et al** Detection and characterization of growth inhibitory factors: epidermal inhibitory pentapeptide (EIP). In: McKay I and Leigh I (eds). Growth factors, a practical approach, IRL Press, pp. 133-55, Oxford (1992)

**Whitehead PA et al** Identification and partial characterization of a serum enzyme which hydrolyses epidermal inhibitory pentapeptide. Biochemical and Biophysical Research Communications 175: 978-85 (1991)

## Endothelins

**Leppaluoto J and Ruskoaho H** Endothelin peptides: biological activities, cellular signaling and clinical significance. Ann. Med. 24: 153-61 (1992)

**Miller RC et al** Endothelins - from receptors to medicine [Trends in Pharmacological Sciences](#) 14: 54-60 (1993)

**O'Halloran DJ et al** Neuropeptides synthesized in the anterior pituitary: possible paracrine role. Molecular and Cellular Endocrinology 75: C7-C12 (1991)

**Rubanyi GM and Parker Botelho LH** Endothelins. FASEB Journal 5: 2713-20 (1991);

**Rubanyi GM** (edt) Endothelin. Oxford Univ. Press, New York, 1991

**Simonson MS and Dunn MJ** Endothelin peptides and the kidney. Annual Review of Physiology 55: 249-65 (1993)

**Sokolovsky M et al** Endothelins and sarafotoxins: physiological regulation, receptor subtypes and transmembrane signaling [Trends in Biochemical Sciences](#) 16: 261-4 (1991);

**Sokolovsky M et al** Structure-function relationships of endothelins, sarafotoxins, and their receptor subtypes. Journal of Neurochemistry 59: 809-21 (1992)

**Opgenorth TJ et al** Endothelin-converting enzymes. FASEB Journal of 6: 2653-9 (1992)

**Arinami T et al** Chromosomal assignments of the human endothelin family genes: the endothelin-1 gene (EDN1) to 6p23- p24, the endothelin-2 gene (EDN2) to 1p34, and the endothelin-3 gene (EDN3) to 20q13.2-q13.3. American Journal of Human Genetics 48: 990-6 (1991)

**Benatti L et al** Two preproendothelin 1 mRNAs transcribed by alternative promoters. Journal of Clinical Investigation 91: 1149-56 (1993)

**Bloch KD et al** Structural organization and chromosomal assignment of the gene encoding endothelin. Journal of Biological Chemistry 264: 10851-7 (1989)

- Bloch KD et al** cDNA cloning and chromosomal assignment of the gene encoding endothelin 3. *Journal of Biological Chemistry* 264: 18156-61 (1989)
- Brown MR et al** Transforming growth factor-beta: Role in mediating serum-induced endothelin production by vascular endothelial cells. *Endocrinology* 129: 2355-60 (1991);
- Ehrenreich H et al** Selective autoregulation of endothelins in primary astrocyte cultures: endothelin receptor-mediated potentiation of endothelin-1 secretion. *The New Biologist* 3: 135-41 (1991)
- Giaid A et al** Endothelin 1, an endothelium-derived peptide, is expressed in neurons of the human spinal cord and dorsal root ganglia. *Proceedings of the National Academy of Science (USA)* 86: 7634-8 (1989)
- Inoue A et al** The human preproendothelin-1 gene: complete nucleotide sequence and regulation of expression. *Journal of Biological Chemistry* 264: 14954-9 (1989)
- Inoue A et al** The human endothelin family: three structurally and pharmacologically distinct isopeptides predicted by three separate genes. *Proceedings of the National Academy of Science (USA)* 86: 2863-7 (1989)
- Itoh Y et al** Cloning and sequence analysis of cDNA encoding the precursor of a human endothelium-derived vasoconstrictor peptide, endothelin. identity of human and porcine endothelin. *FEBS Letters* 231: 440-4 (1988)
- Lin HY et al** Cloning and functional expression of a vascular smooth muscle endothelin 1 receptor. *Proceedings of the National Academy of Science (USA)* 88: 3185-9 (1991);
- Ohkubo S et al** Specific expression of human endothelin-2 (ET-2) gene in a renal adenocarcinoma cell line: molecular cloning of cDNA encoding the precursor of ET-2 and its characterization. *FEBS Letters* 274: 136-40 (1990)
- Saida K et al** A novel peptide, vasoactive intestinal contractor, of a new (endothelin) peptide family. *Journal of Biological Chemistry* 264: 14613-6 (1989)
- Springall DS et al** Endothelin immunoreactivity of airway epithelium in asthmatic patients. *Lancet* 337: 697-701 (1991)
- Tokito F et al** Epidermal growth factor (EGF) decreases endothelin-2 (ET-2) production in human renal adenocarcinoma cells. *FEBS Letters* 295: 17-21 (1991)
- Williams DL et al** Sarafotoxin S6c: An agonist which distinguishes between endothelin receptor subtypes. *Biochemical and Biophysical Research Communications* 175: 556-61 (1991)
- Yanagisawa M et al** A novel potent vasoconstrictor peptide produced by vascular endothelial cells *Nature (London)* 332: 411-5 (1988)
- Yanagisawa M and Masaki T** Endothelin, a novel endothelium-derived peptide. *Biochemical Pharmacology* 38: 1877-83 (1989)

- Arai H et al** Cloning and expression of a cDNA encoding an endothelin receptor Nature (London) 348: 730-2 (1990)
- Arai H et al** The human endothelin-B receptor gene: structural organization and chromosomal assignment. Journal of Biological Chemistry 268: 3463- 70 (1993);
- Culouscou JM et al** Biochemical analysis of the epithelin receptor. Journal of Biological Chemistry 268: 10458-62 (1993)
- Cyr C et al** Cloning and chromosomal localization of a human endothelin ETA receptor. Biochemical and Biophysical Research Communications 181: 184-90 (1991)
- Hosoda K et al** Organization, structure, chromosomal assignment, and expression of the gene encoding the human endothelin-A receptor. Journal of Biological Chemistry 267: 18797-804 (1992)
- Nakamuta M et al** Cloning and sequence analysis of a cDNA encoding human non-selective type of endothelin receptor. Biochemical and Biophysical Research Communications 177: 34- 9 (1991)
- Ogawa Y et al** Molecular cloning of a non-isopeptide- selective human endothelin receptor. Biochemical and Biophysical Research Communications 178: 248-55 (1991);
- Takayanagi R et al** Multiple subtypes of endothelin receptors in porcine tissues: characterization by ligand binding, affinity labeling and regional distribution. Regulatory Peptides 32: 23-37 (1991)
- Asano T et al** Effect of endothelin-1 as growth factor on a human glioma cell line; its characteristic promotion of DNA synthesis. Journal of Neurooncology 18(1): 1-7 (1993);
- Battistini B et al** Growth regulatory properties of endothelins. Peptides 14: 385-99 (1993)
- Brown MR et al** Transforming growth factor beta: role in mediating serum-induced endothelin production by vascular endothelial cells. Endocrinology 129: 2355-60 (1991);
- Diochot S et al** Effects of endothelins on the human megakaryoblastic cell line MEG-01. European Journal of Pharmacol. 227: 427-31 (1992)
- Eguchi K et al** Stimulation of mitogenesis in human thyroid epithelial cells by endothelin. Acta Endocrinol. Copenh. 128: 215-20 (1993)
- Ehrenreich H et al** Endothelins belong to the assortment of mast cell-derived and mast cell-bound cytokines. New Biol. 4: 147-56 (1992)
- Fabregat I and Rozengurt E** Vasoactive intestinal contractor, a novel peptide, shares a common receptor with endothelin-1 and stimulates Ca<sup>2+</sup> mobilization and DNA synthesis in Swiss 3T3 cells. Biochemical and Biophysical Research Communications 167: 161-7 (1990)

- Fantoni G et al** Endothelin-1: a new autocrine/paracrine factor in rat testis. *American Journal of Physiology* 265: E267-74 (1993)
- Fujii Y et al** Endothelin as an autocrine factor in the regulation of parathyroid cells. *Proceedings of the National Academy of Science (USA)* 88: 4235-9 (1991)
- Hahn AW et al** Stimulation of endothelin mRNA and secretion in rat vascular smooth muscle cells: a novel autocrine function. *Cell Regul.* 1: 649-59 (1990)
- Imokawa G et al** Endothelins secreted from human keratinocytes are intrinsic mitogens for human melanocytes. *Journal of Biological Chemistry* 267: 24675-80 (1992)
- Ito H et al** Endothelin-1 is an autocrine/paracrine factor in the mechanism of angiotensin II-induced hypertrophy in cultured rat cardiomyocytes. *Journal of Clinical Investigation* 92: 398-403 (1993)
- Kohan DE and Padilla E** Endothelin-1 is an autocrine factor in rat inner medullary collecting ducts. *American Journal of Physiology* 263: F607-12 (1992)
- Kusuhara M et al** Stimulation of anchorage-independent cell growth by endothelin in NRK 49F cells. *Cancer Research* 52: 3011-4 (1992)
- Peacock AJ et al** Endothelin-1 and endothelin-3 induce chemotaxis and replication of pulmonary artery fibroblasts. *American Journal of Respir. Cell. Mol. Biol.* 7: 492-9 (1992)
- Saenz de Tejada I et al** Endothelin in the urinary bladder. I. Synthesis of endothelin-1 by epithelia, muscle and fibroblasts suggests autocrine and paracrine cellular regulation. *Journal of Urol.* 148: 1290-8 (1992)
- Schrey MP et al** Bombesin and glucocorticoids stimulate human breast cancer cells to produce endothelin, a paracrine mitogen for breast stromal cells. *Cancer Research* 52: 1786-90 (1992)
- Shichiri M et al** Endothelin-1 is an autocrine/paracrine growth factor for human cancer cell lines. *Journal of Clinical Investigation* 87: 1867-71 (1991)
- Simonson MS and Dunn MJ** Cellular signaling by peptides of the endothelin gene family. *FASEB Journal* 4: 2989-3000 (1990)
- Yeh YC et al** Synergistic effects of endothelin-1 (ET-1) and transforming growth factor alpha (TGF-alpha) or epidermal growth factor (EGF) on DNA replication and G1 to S phase transition. *Biosci. Rep.* 11: 171-80 (1991)
- Zachary I et al** Bombesin, vasopressin, and endothelin rapidly stimulate tyrosine phosphorylation in intact Swiss 3T3 cells. *Proceedings of the National Academy of Science (USA)* 88: 4577-81 (1991)



# Gastrin Releasing Peptide

**Batthey JF et al** Molecular cloning of the bombesin/gastrin-releasing peptide receptor from Swiss 3T3 cells. *Proceedings of the National Academy of Science (USA)* 88: 395-9 (1991)

**Conlon JM et al** Primary structures of the bombesin-like neuropeptides in frog brain show that bombesin is not the amphibian gastrin-releasing peptide. *Biochemical and Biophysical Research Communications* 178: 526-30 (1991)

**Feldman RI et al** Purification and characterization of the bombesin/gastrin-releasing peptide receptor from Swiss 3T3 cells. *Journal of Biological Chemistry* 265: 17364-72 (1990)

**Hajri A et al** Gastrin-releasing peptide: in vivo and in vitro growth effects on an acinar pancreatic carcinoma. *Cancer Research* 52: 3726-32 (1992)

**Sausville EA et al** Expression of the gastrin-releasing peptide gene in human small cell lung cancer: evidence for alternative processing resulting in three distinct mRNAs. *Journal of Biological Chemistry* 261: 2451-7 (1986)

**Spindel ER et al** Cloning and characterization of cDNAs encoding human gastrin-releasing peptide. *Proceedings of the National Academy of Science (USA)* 81: 5699-703 (1984)

**Batthey J and Wada E** Two distinct receptor subtypes for mammalian bombesin-like peptides. *Trends in Neurological Sciences* 14: 524-8 (1991)

**Batthey J et al** Molecular cloning of the bombesin/gastrin-releasing peptide precursor from Swiss 3T3 cells. *Proceedings of the National Academy of Science (USA)* 88: 395-9 (1991)

**Kane MA et al** Isolation of a gastrin releasing peptide receptor from normal rat pancreas. *Peptides* 12: 207-13 (1991)

**Kane MA et al** Isolation of the bombesin/gastrin-releasing peptide receptor from human small cell lung carcinoma NCI-H345 cells. *Journal of Biological Chemistry* 266: 9486-93 (1991)

**Schantz LJ et al** Assignment of the GRP receptor gene to the human X chromosome. *Cytogenetics and Cell Genetics* 58: 2085-6 (1991)

**Wada E et al** cDNA cloning, characterization, and brain region-specific expression of a neuromedin B-preferring bombesin receptor. *Neuron* 6: 421-30 (1991)

**Willey JC et al** Bombesin and the C-terminal tetradecapeptide of gastrin-releasing peptide are growth factors for human bronchial epithelial cells. *Experimental Cell Research* 153: 245-8 (1984)

**Avis IL et al** Preclinical evaluation of an anti-autocrine growth factor monoclonal antibody for treatment of patients with small-cell lung cancer [Journal of the National Cancer Institute](#) 83: 1470-6 (1991)

**Mulshine J et al** Phase I evaluation of an anti-gastrin releasing peptide (GRP) monoclonal antibody (MoAB) in patients with advanced lung cancer. *Proc. Am. Soc. Clin. Oncol.* 7: 213 (1988)

**Radulovic S et al** Inhibition of growth of HT-29 human colon cancer xenografts in nude mice by treatment with bombesin/gastrin releasing peptide antagonist (RC-3095). *Cancer Research* 51: 6006-9 (1991)

**Sehti T et al** Growth of small cell lung cancer cells: stimulation by multiple neuropeptides and inhibition by broad spectrum antagonists in vitro and in vivo. *Cancer Research* 52: 2737s-42s (1992)

## Oligodendroglia

**Giulian D et al** Brain peptides and glial growth. I. Glial promoting factors as regulators of gliogenesis in the developing and injured central nervous system. *Journal of Cell Biology* 102: 803-11 (1986)

**Giulian D et al** A growth factor from neuronal cell lines stimulates myelin protein synthesis in mammalian brain. *Journal of Neurosci.* 11: 327-36 (1991)

**Dickson IR and Scheven BA** Regulation of new osteoclast formation by a bone cell-derived macromolecular factor. *Biochemical and Biophysical Research Communications* 159: 1383-90 (1989)

**Gospodarowicz D et al** Purification of a growth factor for ovarian cells from bovine pituitary glands. *Proceedings of the National Academy of Science (USA)* 71: 2295-9 (1974)

**Makris A et al** The nonluteal porcine ovary as a source of angiogenic activity. *Endocrinology* 115: 1672-7 (1984)

**Peterson PK et al** The opioid-cytokine connection. *Journal of Neuroimmunology* 83(1-2): 63-69 (1998)

**Zagon IS et al** Opioid growth factor ([Met<sup>5</sup>]enkephalin) prevents the incidence and retards the growth of human colon cancer. *American Journal of Physiology* 271(3 Pt 2): R780-786 (1996)

**Zagon IS et al** Opioid growth factor tonically inhibits human colon cancer cell proliferation in tissue culture. *American Journal of Physiology* 271(3 Pt 2): R511-18 (1996)

**Zagon IS et al** Zeta (zeta), the Opioid growth factor receptor: identification and characterization of binding subunits. *Brain Research* 605(1): 50-56 (1993)

**Zagon IS et al** Cloning, sequencing, chromosomal location, and function of cDNAs encoding an opioid growth factor receptor (OGFr) in humans. *Brain Research* 856(1-2):75-83 (2000)

## Myelo peptide

**Mikhailova AA et al** Immunoregulatory effects of two bone-marrow hexapeptides (myelo peptides) in experimental models of immunodeficiency. *Immunology Letters* 47(3): 199-203 (1995)

**Strelkov LA et al** The bone marrow peptide (myelo peptide-2) abolishes induced by human leukemia HL-60 cell suppression of T lymphocytes. *Immunology Letters* 50(3): 143-7 (1996)

## Myelo peptide-4

**Strelkov LA et al** A new endogenous differentiating factor ([myelo peptide-4](#)) for [myeloid cells](#). *FEBS Letters* 470(3): 281-284 (2000)

## Osteogenic Growth Peptide

**Bab I et al** Histone H4-related osteogenic growth peptide (OGP): a novel circulating stimulator of osteoblastic activity [EMBO Journal](#) 11(5): 1867-73 (1992);

**Greenberg Z et al** Structural and functional characterization of osteogenic growth peptide from human serum: identity with rat and mouse homologs. *Journal of Clinical Endocrinology and Metabolism* 80(8): 2330-5 (1995)

# Hemoregulatory Peptide

**King AG et al** Regulation of colony-stimulating activity production from bone marrow stromal cells by the hemoregulatory peptide, HP-5 *Experimental Hematology* 20: 223-8 (1992)

**Laerum OD et al** Inhibitory effects of a synthetic pentapeptide on hematopoietic stem cells in vivo and in vitro. *Experimental Hematology* 12: 7-17 (1984)

**Laerum OD and Paukovits WR** Modification of murine hemopoiesis in vivo by a synthetic hemoregulatory peptide (HP5b). *Differentiation* 27: 106-112 (1984)

**Laerum OD et al** Selectivity of hemoregulatory peptide (HP5b) action in culture. *International Journal of Cell Cloning* 8: 431-44 (1990)

**Laerum OD et al** The dimer of hemoregulatory peptide HP5b stimulates mouse and human myelopoiesis in vitro. *Experimental Hematology* 16: 274-80 (1988)

**Laerum OD et al** The sequence of the hemoregulatory peptide is present in Gi alpha proteins. *FEBS Letters* 269: 11-4 (1990)

**Paukovits WR** Stem cell (CFU-S) inhibitory peptides: biological properties of application of pEEDCK as hemoprotector in cytostatic tumor therapy. *Experimental Hematology Today* 72-80 (1989)

**Paukovits WR et al** the use of hemoregulatory peptides (pEEDCK monomer and dimer) for reduction of cytostatic drug induced hemopoietic damage. *Cancer Treat. Rev.* 17: 347-54 (1990)

**Paukovits WR et al** Hemoregulatory peptide pGlu-Glu-Asp-Cys-Lys: a new synthetic derivative for avoiding dimerization and loss of inhibitory activity. *Mol. Pharmacol.* 38: 401-9 (1990)

**Paukovits WR et al** Prevention of hematotoxic side effects of cytostatic drugs in mice by a synthetic hemoregulatory peptide. *Cancer Research* 50: 328-32 (1990)

**Paukovits WR et al** Inhibition of hematopoietic stem cell proliferation by hemoregulatory peptide pyroGlu-Glu-Asp-Cys-Lys (pEEDCK) provides protection against short-term neutropenia and long-term damage. *Annals of the New York Academy of Science* 628: 92-104 (1991)

**Paukovits WR et al** Protection from arabinofuranosylcytosine and n-mustard-induced myelotoxicity using hemoregulatory peptide pGlu-Glu-Asp-Cys-Lys monomer and dimer. *Blood* 77: 1313-9 (1991)

**Paukovits WR et al** Pre-CFU-S quiescence and stem cell exhaustion after cytostatic drug treatment: protective effects of the inhibitory peptide pGlu-Glu-Asp-Cys-Lys (pEEDCK). *Blood* 81: 1755-61 (1993)

**Veiby OP et al** Indirect stimulation of hemopoiesis by hemoregulatory peptide (HP5b) dimer in murine long-term bone marrow cultures. *Experimental Hematology* 20: 192-5 (1992)

## Spasmolytic Protein

**Bar-Shavit Z et al** Enhancement of phagocytosis - a newly found activity of substance P in its N-terminal tetrapeptide sequence. *Biochemical and Biophysical Research Communications* 94: 1445-51 (1980)

**Blum AM et al** Substance P and somatostatin can modulate the amount of IgG2a secreted in response to schistosome egg antigens in murine *Schistosomiasis mansoni*. *Journal of Immunology* 151: 6994-7004 (1993)

**Bozic CR et al** Neurogenic amplification of immune complex formation. *Science* 273: 1722-25 (1996)

**Calvo CF et al** Substance P enhances IL2 expression in activated human T cells. *Journal of Immunology* 148: 3498-504 (1992)

**Eskay RL et al** Interleukin-1alpha and tumor necrosis factor-alpha differentially regulate enkephalin, vasoactive intestinal polypeptide, neurotensin, and substance P biosynthesis in chromaffin cells. *Endocrinology* 130: 2252-8 (1992)

**Everard MJ et al** In vitro effects of substance P analog [D-Arg1, D-Phe5, D-Trp7,9, Leu11] substance P on human tumor and normal cell growth. *British Journal of Cancer* 65: 388-92 (1992)

**Freidin M and Kessler JA** Cytokine regulation of substance P expression in sympathetic neurons. *Proceedings of the National Academy of Science (USA)* 88: 3200-3 (1991);

**Gether U et al** Stable expression of high affinity NK1 (substance P) and NK2 (neurokinin A) receptors but low affinity NK3 (neurokinin B) receptors in transfected CHO cells. *FEBS Letters* 296: 241-4 (1992)

**Gilchrist CA et al** Identification of nerve growth factor-responsive sequences within the 5' region of the bovine preprotachykinin gene. *DNA and Cell Biology* 10: 743-9 (1991);

**Harmar AJ et al** Identification and cDNA sequence of delta-preprotachykinin, a fourth splicing variant of the rat substance P precursor. *FEBS Letters* 275: 22-4 (1990);

**Hershey AD and Krause JE** Molecular characterization of a functional cDNA encoding the rat substance P receptor. *Science* 247: 958-62 (1990)

**Jacquin TD et al** Substance P immunoreactivity of rat brain stem neurons in primary culture. *Journal of Neuroscience Research* 31: 131-5 (1992)

**Jansco N et al** Direct evidence for neurogenic inflammation and its prevention by denervation and by pretreatment with capsaicin. *British Journal of Pharmacol.* 31: 138-51 (1967)

**Johnson CL and Johnson CG** Tumor necrosis factor and interleukin-1 down-regulate receptors for substance P in human astrocytoma cells. *Brain Research* 564: 79-85 (1991);

**Kähler CM et al** Substance P: a competence factor from human fibroblast proliferation that induces the release of growth regulatory arachidonic acid metabolites. *Journal of Cellular Physiology* 156: 579-87 (1993)

**Kawaguchi Y et al** Sequence analysis of cloned cDNA for rat substance P precursor: existence of a third substance P precursor. *Biochemical and Biophysical Research Communications* 139: 1040-6 (1986)

**Lembeck F et al** Increase of substance P in primary afferent nerves during chronic pain. *Neuropeptides* 1: 175-80 (1981)

**Lotz M et al** Substance P activation of rheumatoid synoviocytes: neural pathway in pathogenesis of arthritis. *Science* 235: 893-5 (1987)

**Mantyh PW** Substance P and the inflammatory and immune response. *Annals of the New York Academy of Science* 632: 263-71 (1991)

**Marasco WA et al** Substance P binds to the formylpeptide chemotaxis receptor on the rabbit neutrophil. *Biochemical and Biophysical Research Communications* 99: 1065-72 (1982)

**Martin FC et al** Substance P stimulates IL1 production by astrocytes via intracellular calcium. *Brain Research* 599: 13-8 (1992)

**Nawa H et al** Nucleotide sequence of cloned cDNA for two types of bovine brain substance P precursors *Nature (London)* 306: 32-6 (1984)

**Nilsson J et al** Stimulation of connective tissue cell growth by substance P and substance K *Nature (London)* 315: 61-4 (1985)

**Pascual DW et al** The cytokine-like action of substance P upon B cell differentiation. *Reg. Immunology* 4: 100-4 (1992)

**Payan GD** Neuropeptides and inflammation: the role of substance P. *Annual Review of Medicine* 40: 341-52 (1989)

**Rameshwar P et al** Immunoregulatory effects of neuropeptides

**Rameshwar P et al** Stimulation of interleukin-2 production by substance p. *Journal of Neuroimmunol.* 37: 65-74 (1992); Stimulation of IL2 production in murine lymphocytes by substance P and related tachykinins. *Journal of Immunology* 151: 2484-96 (1993);

**Rameshwar P et al** In vitro stimulatory effect of substance P on hematopoiesis. *Blood* 81: 391-8 (1993)

**Ruff MR et al** Substance P receptor-mediated chemotaxis of human monocytes. *Peptides* 2: 107-11 (1985)

**Sethi T and Rozenfurt E** Multiple neuropeptides stimulate clonal growth of small cell lung cancer: Effects of bradykinin, vasopressin, cholecystokinin, galanin, and neurotensin. *Cancer Research* 51: 3621-3 (1991)

**Skidgel RA et al** Metabolism of substance P and bradykinin by human neutrophils. *Biochemical Pharmacology* 41: 1335-44 (1991)

**Soder O and Hellström PM** Neuropeptide regulation of human thymocyte, guinea pig T lymphocyte and rat B lymphocyte mitogenesis. *International Archives of Allergy Appl. Immunology* 84: 205-11 (1987)

**Stanisz AM et al** Differential effects of vasoactive intestinal peptide, substance P, and somatostatin on immunoglobulin synthesis and proliferation by lymphocytes from Peyer's patches, mesenteric lymph nodes, and spleen. *Journal of Immunology* 136: 152-6 (1986);

**Takeda Y et al** Molecular cloning, structural characterization and functional expression of the human substance P receptor. *Biochemical and Biophysical Research Communications* 179: 1232-40 (1991)

**Wang L et al** Differential processing of substance P and neurokinin A by plasma dipeptidyl(amino)peptidase IV, aminopeptidase M and angiotensin converting enzyme. *Peptides* 12: 1357-64 (1991)

**Wiedermann CJ et al** In vitro human polymorphonuclear leukocyte chemokinesis and human monocyte chemotaxis are different activities of aminoterminal and carboxyterminal substance P. *Naunyn-Schmiedeberg's Arch. Pharmacol.* 340: 665-8 (1986)

## Tachykinins

**Bevis CL and Zasloff M** Peptides from frog skin. *Annual Review of Biochemistry* 59: 395-414 (1990)

**Buck SH et al** Tachykinins and their receptors: Pharmacology, biochemistry and molecular biology advance a neuropeptide story to the forefront of science. *Neurochem. International* 18: 167-70 (1991)

**Burcher E et al** Neuropeptide gamma, the most potent contractile tachykinin in human isolated bronchus, acts via a non-classical NK2 receptor. *Neuropeptides* 20: 79-82 (1991)

**Castiglione R de and Gozzini L** Non-mammalian peptides: structure determination synthesis, and biological activity. *Chimicaoggi* April 1991, pp. 9-15

- Chang MM and Leeman SE** Isolation of a sialogic peptide from bovine hypothalamus tissue and its characterization as substance P. *Journal of Biological Chemistry* 245: 4784-90 (1970)
- Dam TV et al** gamma-preprotachykinin-(72-92)-peptide amide: an endogenous preprotachykinin I gene-derived peptide that preferentially binds to neurokinin 2 receptors. *Proceedings of the National Academy of Science (USA)* 87: 246-250 (1990);
- Eglezos A et al** Modulation of the immune response by tachykinins. *Immunology Cell. Biol.* 69: 285-94 (1991)
- Gilchrist CA et al** Identification of nerve growth factor-responsive sequences within the 5' region of the bovine preprotachykinin gene. *DNA and Cell Biology* 10: 743-9 (1991);
- Gilchrist CA et al** Regulation of preprotachykinin gene expression by nerve growth factor. *Annals of the New York Academy of Science* 632: 391-3 (1991)
- Harmar AJ et al** Identification and cDNA sequence of delta-preprotachykinin, a fourth splicing variant of the rat substance P precursor. *FEBS Letters* 275: 22-4 (1990)
- Helke CJ et al** Diversity in mammalian tachykinin peptidergic neurons: multiple peptides, receptors, and regulatory mechanisms. *FASEB Journal* 4: 1606-15 (1990);
- Hershey AD and Krause JE** Molecular characterization of a functional cDNA encoding the rat substance P receptor. *Science* 247: 958-62 (1990)
- Kage R et al** Neuropeptide gamma: a peptide isolated from rabbit intestine that is derived from gamma-preprotachykinin. *Journal of Neurochemistry* 50: 1412-7 (1988);
- Kanagawa K et al** Neuromedin K: a novel mammalian tachykinin identified in porcine spinal cord. *Biochemical and Biophysical Research Communications* 114: 533-540 (1983)
- Kimura S et al** Pharmacological characterization of novel mammalian tachykinins, neurokinin alpha and neurokinin beta. *Neuroscience Research* 2: 97-104 (1984)
- Krause JE et al** Three rat preprotachykinin mRNAs encode the neuropeptides substance P and neurokinin A. *Proceedings of the National Academy of Science (USA)* 84: 881-5 (1987)
- Lemaire I** Bombesin-related peptides modulate interleukin-1 production by alveolar macrophages. *Neuropeptides*, 20: 217-23 (1991)
- Li XJ et al** Cloning, heterologous expression and developmental regulation of a Drosophila receptor for tachykinin-like peptides [EMBO Journal](#) 10: 3221-9 (1991); **Lotz**
- M et al** Effect of neuropeptides on production of inflammatory cytokines by human monocytes. *Science* 241: 1218-21 (1988)
- Maggio JE** Tachykinins. *Annual Review of Neuroscience* 11: 13-28 (1990)



- Masu Y et al** cDNA cloning of bovine substance K receptor through oocyte expression system *Nature (London)* 329: 836-8 (1987)
- Munekata E** Neurokinin A and B. *Comparative Biochemistry and Physiology [C]* 98C: 171-9 (1991)
- Nakanishi S** Structure and regulation of the preprotachykinin gene. *Trends in Neurological Sciences* 9: 41-4 (1986)
- Nawa H et al** Tissue-specific generation of two preprotachykinin mRNAs from one gene by alternative RNA splicing *Nature (London)* 312: 729-34 (1984)
- O'Halloran DJ et al** Neuropeptides synthesized in the anterior pituitary: possible paracrine role. *Molecular and Cellular Endocrinology* 75: C7-C12 (1991)
- Ohkubo H and Nakanishi S** Molecular characterization of the three tachykinin receptors. *Annals of the New York Academy of Science* 632: 53-62 (1991)
- Regoli D et al** Pharmacological receptors for substance P and neurokinins. *Life Sciences* 40: 109-117 (1987)
- Rozengurt E** Neuropeptides as cellular growth factors: Role of multiple signaling pathways. *European Journal of Clinical Investigation* 21: 123-34 (1991)
- Schoofs L et al** Locustatachykinin I and II, two novel insect neuropeptides with homology to peptides of the vertebrate tachykinin family. *FEBS Letters* 261: 397-401 (1990)
- Schüller HM** Receptor-mediated mitogenic signals and lung cancer. *Cancer Cells* 3: 496-503 (1991)
- Sethi T and Rozengurt E** Multiple neuropeptides stimulate clonal growth of small cell lung cancer: effects of bradykinin, vasopressin, cholecystokinin, galanin, and neurotensin. *Cancer Research* 51: 3621-3 (1991)
- Shigemoto R et al** Cloning and expression of a rat neuromedin K receptor cDNA. *Journal of Biological Chemistry* 265: 623-8 (1990)
- Takeda Y et al** Analysis of tachykinin peptide family gene expression patterns by combined high performance liquid chromatography, radioimmunoassay. *Methods Neurosci.* 6: 119-30 (1991)
- Weihe E et al** The tachykinin neuroimmune connection in inflammatory pain. *Annals of the New York Academy of Science* 632: 283-95 (1991)
- Wiedermann CJ et al** Priming of normal human neutrophils by tachykinins: Tuftsin-like inhibition of in vitro chemotaxis stimulated by formylpeptide or interleukin-8. *Regulatory Peptides* 36: 359-68 (1991)
- Yokota Y et al** Molecular characterization of a functional cDNA for rat substance P receptor. *Journal of Biological Chemistry* 264: 17649-52 (1989)

# Vasopressin

**Bluthe RM and Danzer R** Chronic intracerebral infusions of vasopressin and vasopressin antagonist modulate behavioral effects of interleukin-1 in rat. *Brain Research Bulletin* 29: 897-900 (1992)

**Brownstein MJ et al** Synthesis, transport, and release of posterior pituitary hormones. *Science* 207: 373-378 (1980)

**Clements JA and Funder JW** Arginine vasopressin (AVP) and AVP-like immune reactivity in peripheral tissues. *Endocrinol. Reviews* 7: 449-60 (1986)

**Domin J and Rozengurt E** Heterologous desensitization of platelet-derived growth factor-mediated arachidonic acid release and prostaglandin synthesis. *Journal of Biological Chemistry* 267: 15217-23 (1992)

**Ghosh PM et al** Arginine vasopressin stimulates mesangial cell proliferation by activating the epidermal growth factor receptor. *American Journal of Physiology. Renal Physiology* 2001 Jun; 280(6): F972-9 (2001)

**Gibbs DM** Vasopressin and oxytocin: hypothalamic modulations of the stress response: a review. *Psychoneuroendocrinology* 11: 131-40 (1986)

**Ito M et al** Molecular basis of autosomal dominant neurohypophyseal diabetes insipidus: cellular toxicity caused by the accumulation of mutant vasopressin precursors within the endoplasmic reticulum. *Journal of Clinical Investigation* 99: 1897-1905 (1997)

**Ivell R and Burbach JPH** The molecular biology of vasopressin and oxytocin genes. *Journal of Neuroendocrinology* 3: 583-5 (1991)

**Johnson HM et al** Vasopressin replacement of interleukin 2 requirement in gamma interferon production. Lymphokine activity of a neuroendocrine hormone. *Journal of Immunology* 129: 963-86 (1982)

**Johnson HM and Torres BA** Regulation of lymphokine production by arginine vasopressin and oxytocin: modulation of lymphocyte function by neurohypophyseal hormone. *Journal of Immunology* 135: 773s-5s (1985)

**Land H et al** Nucleotide sequence of cloned cDNA encoding bovine arginine vasopressin-neurophysin II precursor. *Nature* 295: 299-303 (1982)

**Pardy K et al** The influence of interleukin-2 on vasopressin and oxytocin gene expression in the rodent hypothalamus. *Journal of Neuroimmunol.* 42: 131-8 (1993);

**Rittig S et al** Identification of 13 new mutations in the vasopressin-neurophysin II gene in 17 kindreds with familial autosomal dominant neurohypophyseal diabetes insipidus. *American Journal of Human Genetics* 58: 107-117 (1996)

**Rozenfurt E et al** Vasopressin stimulation of mouse 3T3 cell growth. Proceedings of the National Academy of Science (USA) 76: 1284-7 (1979)

**Russell WE and Bucher NLR** Vasopressin modulates liver regeneration in the Brattleboro rat. American Journal of Physiology 245: G321-4 (1983)

**Schmale H et al** The mutant vasopressin gene from diabetes insipidus (Brattleboro) rats is transcribed but the message is not efficiently translated [EMBO Journal](#) 3: 3289-3293 (1984)

**Sethi T and Rozenfurt E** Multiple neuropeptides stimulate clonal growth of small cell lung cancer: effects of bradykinin, vasopressin, cholecystokinin, galanin, and neurotensin. Cancer Research 51: 3621-3 (1991)

**Sunde DA and Sokol HW** Quantification of rat neurophysins by polyacrylamide gel electrophoresis (PAGE): application to the rat with hereditary hypothalamic diabetes insipidus. Annals of the New York Academy of Science 248: 345-364 (1975)

**Tahara A et al** Vasopressin increases vascular endothelial growth factor secretion from human vascular smooth muscle cells. European Journal of Pharmacology 368(1): 89-94 (1999)

**Verbeek MA et al** Expression of the vasopressin and gastrin-releasing peptide genes in small cell lung carcinoma cell lines. Pathobiology 60: 136-42 (1992)

**Woll P and Rozenfurt E** Neuropeptides as growth regulators. British Medical Bulletin 45: 492-505 (1989)

**Grant FD et al** Transgenic mouse models of vasopressin expression. Hypertension 22: 640-5 (1993)

## Vasoactive Intestinal Peptide

**Azzari C et al** VIP restores natural killer cell activity depressed by hepatitis B surface antigen. Viral. Immunology 5: 195-200 (1992)

**Bondesson L et al** Dual effects of vasoactive intestinal peptide (VIP) on leukocyte migration. Acta Physiol. Scand. 141: 477-81 (1991)

**Boudard F and Bastide M** Inhibition of mouse T cell proliferation by CGRP and VIP: effects of these neuropeptides on IL2 production and cAMP synthesis. Journal of Neuroscience Research 29: 29-41 (1991)

**Brenneman DE et al** Vasoactive intestinal peptide: a neurotrophic releasing agent and an astroglial mitogen. Journal of Neuroscience Research 25: 386-94 (1990)

- Chelbi-Alix MK et al** VIP induces in HT-29 cells 2'5'-oligoadenylate synthetase and antiviral state via interferon beta/alpha synthesis. *Peptides* 12: 1085-93 (1991)
- Chelbi-Alix MK et al** Induction by vasoactive intestinal peptide of interferon alpha/beta synthesis in glial cells but not in neurons. *Journal of Cellular Physiology* 158: 47-54 (1994)
- Cutz E et al** Release of vasoactive intestinal peptide in mast cells by histamine liberators *Nature (London)* 275: 661-2 (1978)
- Eskay RL et al** Interleukin-1alpha and tumor necrosis factor-alpha differentially regulate enkephalin, vasoactive intestinal polypeptide, neurotensin, and substance P biosynthesis in chromaffin cells. *Endocrinology* 130: 2252-8 (1992)
- Fahrenkrug J and Emson PC** Vasoactive intestinal peptide: functional aspects. *British Med. Bull.* 38: 265-70 (1982)
- Fink JS et al** Cyclic AMP- and phorbol ester-induced transcriptional activation are mediated by the same enhancer element in the human vasoactive intestinal peptide gene. *Journal of Biological Chemistry* 266: 3883-7 (1991)
- Frawley LS et al** Stimulation of prolactin secretion in rhesus monkeys by vasoactive intestinal polypeptide. *Neuroendocrinology* 33: 79-83 (1981)
- Goetzl EJ et al** Generation and recognition of vasoactive intestinal peptide by cells of the immune system. *Annals of the New York Academy of Science* 594: 34-44 (1990);
- Hohmann EL et al** Innervation of periosteum and bone by sympathetic vasoactive intestinal peptide-containing nerve fibres. *Science* 232: 867-8 (1986)
- Haegerstrand A et al** Vasoactive intestinal polypeptide stimulates cell proliferation and adenylate cyclase activity in cultured human keratinocytes. *Proceedings of the National Academy of Science (USA)* 86: 5993-6 (1989)
- Ishioka C et al** Vasoactive intestinal peptide stimulates immunoglobulin production and growth of human B cells. *Clinical and Experimental Immunology* 87: 504-8 (1992);
- Kimata H et al** Differential effect of vasoactive intestinal peptide, somatostatin, and substance P on human IgE and IgG subclass production. *Cellular Immunology* 144: 429-42 (1992)
- Koff WC et al** Modulation of macrophage-mediated tumoricidal activity by neuropeptides and neurohormones. *Journal of Immunology* 135: 350-4 (1985)
- Korman LY et al** Secretin/vasoactive intestinal peptide-stimulated secretion of bombesin/gastrin releasing peptide from human small cell carcinoma of the lung. *Cancer Research* 46: 1214-8 (1986)

- Lamperti ED et al** Characterization of the gene and messages for vasoactive intestinal polypeptide (VIP) in rat and mouse. *Brain Research Mol. Brain. Research* 9: 217-31 (1991)
- Lygren I et al** Vasoactive intestinal peptide and somatostatin in leukocytes. *Scandinavian Journal of Clinical and Laboratory Investigations* 44: 347-51 (1984);
- Mathew RC et al** Vasoactive intestinal peptide stimulates T lymphocytes to release IL5 in murine schistosomiasis mansoni infection. *Journal of Immunology* 148: 3572-7 (1992)
- Moody TW et al** A vasoactive intestinal peptide antagonist inhibits non-small cell lung cancer. *Proceedings of the National Academy of Science (USA)* 90: 4345-9 (1993);
- Moore TC** Modification of lymphocyte traffic by vasoactive neurotransmitter substances. *Immunology* 52: 511-8 (1984)
- O'Doriso MS et al** Vasoactive intestinal peptide as a biochemical marker for polymorphonuclear leukocytes. *Journal of Laboratory and Clinical Medicine* 96: 666-70 (1980)
- O'Doriso MS et al** Vasoactive intestinal peptide: autocrine growth factor in neuroblastoma. *Regulatory Peptides* 37: 213-26 (1992); **Ottaway CA** Vasoactive intestinal peptide as a modulator of lymphocytes and immune function. *Annals of the New York Academy of Science* 527: 486-500 (1988)
- Pence JC and Shorter NA** Autoregulation of neuroblastoma growth by vasoactive intestinal peptide. *Journal of Pediatric Surgery* 27: 935-43 (1992)
- Rao MS et al** Oncostatin M regulates VIP expression in a human neuroblastoma cell line. *Neuroreport* 3: 865-8 (1992)
- Rola-Pleszczynski M et al** The effects of vasoactive intestinal peptide on human natural killer cell function. *Journal of Immunology* 135: 2569-73 (1985)
- Scholar EM and Paul S** Stimulation of tumor cell growth by vasoactive intestinal peptide. *Cancer* 67: 1561-4 (1991)
- Sirianni MC et al** Modulation of human natural killer activity by vasoactive intestinal peptide (VIP) family. VIP, glucagon and GHRF specifically inhibit NK activity. *Regulatory Peptides* 38: 79-87 (1992)
- Soder O and Hellström PM** Neuropeptide regulation of human thymocyte, guinea pig T lymphocyte and rat B lymphocyte mitogenesis. *International Arch. Allergy Appl. Immunology* 84: 205-11 (1987)
- Spangelo BL et al** Production of interleukin 6 by anterior pituitary cells is stimulated by increases intracellular adenosine 3',5' monophosphate and vasoactive intestinal peptide. *Endocrinology* 127: 403-9 (1990)

**Stanisz AM et al** Differential effects of vasoactive intestinal peptide, substance P, and somatostatin on immunoglobulin synthesis and proliferation by lymphocytes from Peyer's patches, mesenteric lymph nodes, and spleen. *Journal of Immunology* 136: 152-6 (1986);

**Tsukada T et al** Identification of a region in the human vasoactive intestinal polypeptide gene responsible for regulation by cyclic AMP. *Journal of Biological Chemistry* 262: 8743-7 (1987)

**van Tol EA et al** Modulatory effects of VIP and related peptides from the gastrointestinal tract on cell mediated cytotoxicity against tumor cells in vitro. *Immunology Investigations* 20: 257-67 (1991)

**Wollina U et al** Vasoactive intestinal peptide (VIP) acting as a growth factor for human keratinocytes. *Neuroendocrinology Letters* 14: 21-31 (1992)

**Zurier RB et al** Vasoactive intestinal peptide synergistically stimulates DNA synthesis in mouse 3T3 cells: role of cAMP, Ca<sup>2+</sup>, and protein kinase C. *Experimental Cell Research* 176: 155-61 (1988)

**Agoston DV et al** Expression of a chimeric VIP gene is targeted to the intestine in transgenic mice. *Journal of Neuroscience Research* 27: 479-86 (1990)

## **Trp-Lys-Tyr-Met-Val-d-Met**

**Bae YS et al** The synthetic chemoattractant peptide, Trp-Lys-Tyr-Met-Val-D-Met, enhances monocyte survival via PKC-dependent Akt activation. *Journal of Leukocyte Biology* 71(2): 329-38 (2002)

**Christophe T et al** The synthetic peptide Trp-Lys-Tyr-Met-Val-Met-NH<sub>2</sub> specifically activates neutrophils through FPRL1/lipoxin A<sub>4</sub> receptors and is an agonist for the orphan monocyte-expressed chemoattractant receptor FPRL2. *Journal of Biological Chemistry* 276(24): 21585-93 (2001)

**He R et al** The synthetic peptide Trp-Lys-Tyr-Met-Val-D-Met is a potent chemotactic agonist for mouse formyl peptide receptor. *Journal of Immunology* 165(8): 4598-605 (2000)

**Li BQ et al** The synthetic peptide WKYMVm attenuates the function of the chemokine receptors CCR5 and CXCR4 through activation of formyl peptide receptor-like 1. *Blood* 97(10): 2941-7 (2001)

**Seo JK et al** A peptide with unique receptor specificity: stimulation of phosphoinositide hydrolysis and induction of superoxide generation in human neutrophils. *Journal of Immunology* 158(4): 1895-901 (1997)

**Seo JK et al** Distribution of the receptor for a novel peptide stimulating phosphoinositide hydrolysis in human leukocytes. *Clinical Biochemistry* 31(3): 137-41 (1998)

# Granulocyte-Macrophage Colony Stimulating Factor

**Demetri GD and Griffin JD** Granulocyte colony-stimulating factor and its receptor. *Blood* 78: 2791-2808 (1991)

**Fan D et al** Granulocyte-macrophage colony-stimulating factor (GM-CSF) in the management of cancer. *In vivo* 5: 571-8 (1991)

**Moore MAS** The clinical use of colony stimulating factors. *Annual Review of Immunology* 9: 159-91 (1991)

**Negrin RS and Greenberg PL** Therapy of hematopoietic disorders with recombinant colony-stimulating factors. *Advances in Pharmacol.* 23: 263-296 (1992)

**Ruef C and Coleman DL** Granulocyte-macrophage colony-stimulating factor: pleiotropic cytokine with potential clinical usefulness. *Rev. Infect. Dis.* 12: 41-62 (1990)

**Barlow DP et al** Close genetic and physical linkage between the murine hemopoietic growth factor genes GM-CSF and multi-CSF IL3 [EMBO Journal](#) 6: 617-23 (1987);

**Cantrell MA et al** Cloning, sequence, and expression of human granulocyte/macrophage colony stimulating factor. *Proceedings of the National Academy of Science (USA)* 82: 6250-4 (1985)

**Frolova EI et al** Linkage mapping of the human CSF2 and IL3 genes. *Proceedings of the National Academy of Science (USA)* 88: 4821-4 (1991)

**Gough NM et al** Molecular cloning of cDNA encoding a murine hematopoietic growth regulator, granulocyte-macrophage colony stimulating factor *Nature (London)* 309: 763-7 (1984)

**Gough NM et al** Structure and expression of the mRNA for murine granulocyte-macrophage colony stimulating factor [EMBO Journal](#) 4: 645-53 (1985)

**Gough NM et al** Localization of the human GM-CSF receptor gene to the X-Y pseudoautosomal region *Nature (London)* 345: 734-6 (1990)

**Huebner K et al** The human gene encoding GM-CSF is at 5q21-32, the chromosome region deleted in the 5q--anomaly. *Science* 230: 1282-5 (1985)

**Kaushansky K et al** Genomic cloning, characterization, and multilineage growth-promoting activity of human granulocyte-macrophage colony-stimulating factor. *Proceedings of the National Academy of Science (USA)* 83: 3101-5 (1986)

**Kuczek ES et al** A granulocyte-colony-stimulating factor gene promoter element responsive to inflammatory mediators is functionally distinct from an identical sequence

in the granulocyte-macrophage colony-stimulating factor gene. *Journal of Immunology* 146: 2426-33 (1991)

**Lang RA et al** Transgenic mice expressing a hemopoietic growth factor gene (GM-CSF) develop accumulations of macrophages, blindness, and a fatal syndrome of tissue damage. *Cell* 51: 675-86 (1987)

**Le Beau MM et al** Assignment of the GM-CSF, CSF-1, and *fms* genes to human chromosome 5 provides evidence for linkage of a family of genes regulating hematopoiesis and for their involvement in the deletion (5q) in myeloid disorders. *Cold Spring Harbor Symposium on Quantitative Biology* 51: 899-909 (1986)

**Lee F et al** Isolation of cDNA for a human granulocyte-macrophage colony-stimulating factor by functional expression in mammalian cells. *Proceedings of the National Academy of Science (USA)* 82: 4360-4 (1985)

**Metcalf D and Moore JG** Divergent disease patterns in granulocyte-macrophage colony-stimulating factor transgenic mice associated with different transgenic insertion sites. *Proceedings of the National Academy of Science (USA)* 85: 7767-71 (1988)

**Miyatake S et al** Structure of the chromosomal gene for granulocyte-macrophage colony stimulating factor: comparison of the mouse and human genes [EMBO Journal](#) 4: 2561-8 (1985)

**Miyatake S et al** Characterization of the mouse granulocyte-macrophage colony-stimulating factor (GM-CSF) gene promoter: Nuclear factors that interact with an element shared by three lymphokine genes, those for GM-CSF, interleukin-4 (IL4), and IL5. *Molecular Cellular Biology* 11: 5894-901 (1991)

**Nimer SD and Golde DW** The 5q- abnormality. *Blood* 70: 1705-12 (1987)

**Price V et al** Expression, purification and characterization of recombinant murine granulocyte-macrophage colony-stimulating factor and bovine interleukin-2 from yeast. *Gene* 55: 287-93 (1987)

**Reichert P et al** Crystallization and preliminary X-ray investigation of recombinant human granulocyte-macrophage colony-stimulating factor. *Journal of Biological Chemistry* 265: 452-3 (1990)

**Schanafelt AB et al** The amino-terminal helix of GM-CSF and IL5 governs high affinity binding to their receptors [EMBO Journal](#) 10: 4105-12 (1991)

**Stanley E et al** The structure and expression of the murine gene encoding granulocyte-macrophage colony stimulating factor: evidence for utilization of alternative promoters [EMBO Journal](#) 4: 2569-73 (1985)

**Tanaka H and Kaneko T** Pharmacokinetic and pharmacodynamic comparisons between human granulocyte colony-stimulating factor purified from human bladder carcinoma cell line 5637 culture medium and recombinant human granulocyte colony-stimulating



factor produced in Escherichia coli. *Journal of Pharmacology and Experimental Therapeutics* 262: 439-44 (1992)

**van Leeuwen BH et al** Molecular organization of the cytokine gene cluster involving the human IL3, IL4, IL5, and GM-CSF genes on human chromosome 5. *Blood* 73: 1142-8 (1989)

**Wong GG et al** Human GM-CSF: molecular cloning of the complementary DNA and purification of the natural and recombinant proteins. *Science* 228: 810-5 (1985)

**Yang YC et al** The human genes for GM-CSF and IL3 are closely linked in tandem on chromosome 5. *Blood* 71: 958-61 (1988)

**Chiba S et al** Characterization and molecular features of the cell surface receptor for human granulocyte-macrophage colony-stimulating factor. *Leukemia* 4: 29-36 (1990)

**Fung MC et al** Distinguishing between mouse IL3 and IL3 receptor-like (IL5/GM-CSF receptor converter) mRNAs using the polymerase chain reaction method [Journal of Immunological Methods](#) 149: 97-103 (1992)

**Gearing DP et al** Expression cloning of a receptor for human granulocyte-macrophage colony-stimulating factor [EMBO Journal](#) 8: 3667-76 (1989)

**Hayashida K et al** Molecular cloning of a second subunit of the receptor for human granulocyte-macrophage colony-stimulating factor (GM-CSF): reconstitution of a high-affinity GM-CSF receptor. *Proceedings of the National Academy of Science (USA)* 87: 9655-9 (1990)

**Park LS et al** Heterogeneity in human interleukin-3 receptors. A subclass that binds human granulocyte/macrophage colony stimulating factor. *Journal of Biological Chemistry* 264: 5420-7 (1989)

**Park LS et al** Cloning of the low-affinity murine granulocyte-macrophage colony-stimulating factor receptor and reconstitution of a high-affinity receptor complex. *Proceedings of the National Academy of Science (USA)* 89: 4295-9 (1992)

**Raines MA et al** Identification and molecular cloning of a soluble human granulocyte-macrophage colony-stimulating factor receptor. *Proceedings of the National Academy of Science (USA)* 88: 8230-7 (1991)

**Lemoli RM et al** Interleukin 11 stimulates the proliferation of human hematopoietic CD34+ and CD34+CD33-DR- cells and synergises with stem cell factor, interleukin-3, and granulocyte-macrophage colony-stimulating factor. *Experimental Hematology* 21: 1668-72 (1993)

**Lopez AF et al** Reciprocal inhibition of binding between interleukin-3 and granulocyte-macrophage colony-stimulating factor to human eosinophils. *Proceedings of the National Academy of Science (USA)* 86: 7022-6 (1989)

**Metcalf D et al** Synergistic suppression: anomalous inhibition of the proliferation of factor-dependent hemopoietic cells by combination of two colony-stimulating factors. *Proceedings of the National Academy of Science (USA)* 89: 2819-23 (1992)

**Monroy RL et al** Granulocyte-macrophage colony-stimulating factor: more than a hemopoietin. *Clin. Immunology Immunopathol.* 54: 333-46 (1990)

**Warringa RA et al** Modulation and induction of eosinophil chemotaxis by granulocyte-macrophage colony-stimulating factor and interleukin-3. *Blood* 77: 2694-700 (1991)

**Cuthbertson RA and Lang RA** Developmental ocular disease in GM-CSF transgenic mice is mediated by autostimulated macrophages. *Developmental Biology* 134: 119-29 (1989)

**Cuthbertson RA et al** Macrophage products IL1 alpha, TNF alpha and bFGF may mediate multiple cytopathic effects in the developing eyes of GM-CSF transgenic mice. *Experimental Eye Research* 51: 335-44 (1990)

**Dranoff G et al** Involvement of granulocyte-macrophage colony-stimulating factor in pulmonary homeostasis. *Science* 264: 713-6 (1994)

**Elliott MJ et al** Selective up-regulation of macrophage function in granulocyte-macrophage colony-stimulating factor transgenic mice. *Journal of Immunology* 147: 2957-63 (1991)

**Gearing AJ et al** Elevated levels of GM-CSF and IL1 in the serum, peritoneal and pleural cavities of GM-CSF transgenic mice. *Immunology* 67: 216-20 (1989)

**Lang RA et al** TNF alpha, IL1 alpha and bFGF are implicated in the complex disease of GM-CSF transgenic mice. *Growth Factors* 6: 131-8 (1992)

**Metcalf D and Moore JG** Divergent disease patterns in granulocyte-macrophage colony-stimulating factor transgenic mice associated with different transgene insertion sites. *Proceedings of the National Academy of Science (USA)* 85: 7767-71 (1988);

**Metcalf D** Mechanisms contributing to the sex difference in levels of granulocyte-macrophage colony-stimulating factor in the urine of GM-CSF transgenic mice. *Experimental Hematology* 16: 794-800 (1988)

**Metcalf D et al** The excess numbers of peritoneal macrophages in granulocyte-macrophage colony-stimulating factor transgenic mice are generated by local proliferation. *Journal of Experimental Medicine* 175: 877-84 (1992)

**Metcalf D and Rasko JE** Leukemic transformation of immortalized FDC-P1 cells engrafted in GM-CSF transgenic mice. *Leukemia* 7: 878-86 (1993)

**Nishinakamura R et al** Hematopoiesis in mice lacking the entire granulocyte-macrophage colony-stimulating factor/interleukin-3/interleukin-5 functions. *Blood* 88(7): 2458-64 (1996)

**Robb L et al** Hematopoietic and lung abnormalities in mice with a null mutation of the common beta subunit of the receptors for granulocyte-macrophage colony-stimulating factor and interleukins 3 and 5. *Proceedings of the National Academy of Science (USA)* 92(21): 9565-9 (1995)

**Stanley E et al** Granulocyte/macrophage colony-stimulating factor-deficient mice show no major perturbation of hematopoiesis but develop a characteristic pulmonary pathology. *Proceedings of the National Academy of Science (USA)* 91: 5592-6 (1994);

**Tran HT et al** Anti-bacterial activity of peritoneal cells from transgenic mice producing high levels of GM-CSF. *Immunology* 71: 377-82 (1990)

**Cebon J et al** Pharmacokinetics of human granulocyte-macrophage colony-stimulating factor using a sensitive immunoassay *Blood* 72: 1340-7 (1988)

**Katzen NA et al** Comparison of granulocyte-macrophage colony stimulating factor and interleukin-1 production from human peripheral blood mononuclear cells as measured by specific radioimmunoassays [European Cytokine Network](#) 3: 365-72 (1992)

**Lewis CE et al** Measurement of cytokine release by human cells. A quantitative analysis at the single cell level using the reverse hemolytic plaque assay [Journal of Immunological Methods](#) 127: 51-9 (1990)

**Mortensen BT et al** Development and application of a sensitive radioimmunoassay for human granulocyte-macrophage colony-stimulating factor able to measure normal concentrations in blood. *Experimental Hematology* 21: 1366-70 (1993)

**Oez S et al** A highly sensitive quantitative bioassay for human granulocyte-macrophage colony-stimulating factor. *Experimental Hematology* 18: 1108-11 (1990)

**Roncaroli F et al** An immunoenzyme technique for the identification of granulocyte-macrophage colony-stimulating factor (GM-CSF) receptors using digoxigenated-GM-CSF [Journal of Immunological Methods](#) 158: 191-6 (1993)

**Sallerfors B and Olofsson T** Granulocyte-macrophage colony-stimulating factor (GM-CSF) and granulocyte colony-stimulating factor (G-CSF) secretion by adherent monocytes measured by quantitative immunoassays. *European Journal of Haematology* 49: 199-207 (1992)

**Zenke G et al** A cocktail of three monoclonal antibodies significantly increases the sensitivity of an enzyme immunoassay for human granulocyte-macrophage colony-stimulating factor. *Journal of Immunoassay* 12: 185-206 (1991); for further information also see individual cell lines used in individual bioassays.

**Armitage JO** The use of granulocyte-macrophage colony-stimulating factor in bone marrow transplantation. *Semin. Hematology* 29: s14-8 (1992)

**Cebon J et al** The dissociation of GM-CSF efficacy from toxicity according to route of administration: a pharmacodynamic study. *British Journal of Haematology* 80: 144-50 (1992)

**Chelstrom LM et al** Treatment of BCL-1 murine B cell leukemia with recombinant cytokines. Comparative analysis of the anti-leukemic potential of interleukin 1 beta (IL1 beta), interleukin 2 (IL2), interleukin-6 (IL6), tumor necrosis factor alpha (TNF alpha), granulocyte colony stimulating factor (G-CSF), granulocyte-macrophage colony stimulating factor (GM-CSF), and their combination. *Leuk. Lymphoma* 7: 79-86 (1992);

**Demetri GD and Antman KH** Granulocyte-macrophage colony-stimulating factor (GM-CSF): preclinical and clinical investigations. *Semin. Oncol.* 19: 362-85 (1992)

**De Witte T et al** Recombinant human granulocyte-macrophage colony-stimulating factor accelerates neutrophil and monocyte recovery after allogeneic T cell-depleted bone marrow transplantation. *Blood* 79: 1359-65 (1992)

**Dranoff G et al** Vaccination with irradiated tumor cells engineered to secrete murine granulocyte-macrophage colony-stimulating factor stimulates potent, specific, and long-lasting anti-tumor immunity. *Proceedings of the National Academy of Science (USA)* 90: 3539-43 (1993)

**Freund M and Kleine HD** The role of GM-CSF in infection. *Infection* 20: S84-92 (1992)

**Gorin NC et al** Recombinant human granulocyte-macrophage colony-stimulating factor after high-dose chemotherapy and autologous bone marrow transplantation with unpurged and purged marrow in non-Hodgkin's lymphoma: a double-blind placebo-controlled trial. *Blood* 80: 1149-57 (1992)

**Grant SM and Heel RC** Recombinant granulocyte-macrophage colony-stimulating factor (rGM-CSF). A review of its pharmacological properties and prospective role in the management of myelosuppression. *Drugs* 43: 516-60 (1992)

**Gratwohl A et al** Granulocyte-macrophage colony stimulating factor (GM-CSF) in emergency treatment. *Schweiz. Med. Wochenschr.* 121: 413-7 (1991)

**Haas R et al** Recombinant human granulocyte-macrophage colony-stimulating factor (rhGM-CSF) subsequent to chemotherapy improves collection of blood stem cells for autografting in patients not eligible for bone marrow harvest. *Bone Marrow Transplant.* 9: 459-65 (1992)

**Krumwieg D et al** Preclinical studies on synergistic effects of IL1, IL3, G-CSF, and GM-CSF in cynomolgous monkeys. *International Journal of Cell Cloning* 8 (Suppl. 1) 229-48 (1990)

**Khwaja A et al** Recombinant human granulocyte-macrophage colony-stimulating factor after autologous bone marrow transplantation for malignant lymphoma: a British National Lymphoma Investigation double-blind, placebo-controlled trial. *British Journal of Haematology* 82: 317-23 (1992)

**Link H et al** A controlled trial of recombinant human granulocyte-macrophage colony-stimulating factor after total body irradiation, high-dose chemotherapy, and autologous

bone marrow transplantation for acute lymphoblastic leukemia or malignant lymphoma. *Blood* 80: 2188-95 (1992)

**Mitsuyashu RT and Golde DW** The clinical role of granulocyte-macrophage colony-stimulating factor. *Hematology Oncol. Clin. of North Amer.* 3: 411-25 (1989)

**Neidhart JA et al** Dosing regimen of granulocyte-macrophage colony-stimulating factor to support dose-intensive chemotherapy. *Journal of Clin. Oncol.* 10: 1460-9 (1992);

**Nemunaitis J** Colony-stimulating factors: a new step in clinical practice. Part I. *Ann. Med.* 24: 439-44 (1992)

**Nemunaitis J et al** Phase II trial of recombinant human granulocyte-macrophage colony-stimulating factor in patients undergoing allogeneic bone marrow transplantation from unrelated donors. *Blood* 79: 2572-7 (1992)

**Neumanaitis J** Granulocyte-macrophage-colony-stimulating factor: a review from preclinical development to clinical application. *Transfusion* 33: 70-83 (1993)

**Rosenfeld CS and Nemunaitis J** The role of granulocyte-macrophage colony-stimulating factor-stimulated progenitor cells in oncology. *Semin. Hematology* 29: s19-26 (1992)

**Schuster MW** Granulocyte-macrophage colony-stimulating factor (GM-CSF): what role in bone marrow transplantation? *Infection* 20: S95-9 (1992)

**Shadduck RK** Granulocyte-macrophage colony-stimulating factor: present use and future directions. *Semin. Hematology* 29: s38-42 (1992)

**Shea TC et al** Sequential cycles of high-dose carboplatin administered with recombinant human granulocyte-macrophage colony-stimulating factor and repeated infusions of autologous peripheral-blood progenitor cells: a novel and effective method for delivering multiple courses of dose-intensive therapy. *Journal of Clin. Oncol.* 10: 464-73 (1992);

**Singer JW** Role of colony-stimulating factors in bone marrow transplantation. *Semin. Oncol.* 19: s27-31 (1992)

**Stern AC and Jones TC** The side-effect profile of GM-CSF. *Infection* 20: S124-7 (1992)

**Sternberg CN et al** Escalated M-VAC chemotherapy and recombinant human granulocyte-macrophage colony stimulating factor (rhGM-CSF) in patients with advanced urothelial tract tumors. *Ann. Oncol.* 4: 403-7 (1993)

**Steward WP et al** Granulocyte-macrophage colony-stimulating factor allows safe escalation of dose-intensity of chemotherapy in metastatic adult soft tissue sarcomas: a study of the European Organization for Research and Treatment of Cancer Soft Tissue and Bone Sarcoma Group. *Journal of Clin. Oncol.* 11: 15-21 (1993)

**Steward WP** Granulocyte and granulocyte-macrophage colony-stimulating factors. *The Lancet* 342: 153-7 (1993)

**Sureda A et al** GM-CSF administration enhances granulocytic recovery in purged autologous bone marrow transplantation for acute lymphoblastic leukemia. *Progress in Clin. Biol. Res.* 377: 315-20 (1992)

**Tao MH and Levy R** Idiotype/granulocyte-macrophage colony-stimulating factor fusion protein as a vaccine for B cell lymphoma *Nature (London)* 362: 755-8 (1993)

**Tapp H and Vowels M** Prophylactic use of GM-CSF in pediatric marrow transplantation. *Transplantation Proceedings* 24: 2267-8 (1992)

**Vadhan-Raj S et al** Use of granulocyte-macrophage colony-stimulating factor in hematopoietic disorders: biology and nature of response. *Semin. Hematology* 29: s4-13 (1992)

**Vadhan-Raj S** Clinical trials of granulocyte-macrophage colony-stimulating factor for the treatment of aplastic anemia. *Immunology Ser.* 57: 661-70 (1992)

**Valent P et al** Treatment of de novo acute myelogenous leukemia with recombinant granulocyte macrophage-colony-stimulating factor in combination with standard induction chemotherapy: effect of granulocyte macrophage-colony-stimulating factor on white blood cell counts. *Med. Pediatr. Oncol. Suppl.* 2: 18-22 (1992)

**Weiss M and Belohradsky BH** Granulocyte-macrophage colony-stimulating factor (GM-CSF): a variety of possible applications in clinical medicine. *Infection* 20: S81-3 (1992)

**Ye QN et al** Construction of a recombinant human GM-CSF/MCAF fusion protein and study on its in vitro and in vivo antitumor effects. *Science in China Series C Life Sciences* 40(1): 18-26 (1997)

## Thymic Hormones

**Dardenne M and Savino W** Neuroendocrine circuits controlling the physiology of the thymic epithelium. *Annals of the New York Academy of Science* 650: 85-90 (1992);

**Hadden JW** Thymic endocrinology. *International Journal of Immunopharmacology* 14: 345-52 (1992)

**Low TL and Goldstein AL** Thymic hormones: an overview. *Methods in Enzymology* 116: 213-9 (1985); **Oates KK et al** Mechanism of action of the thymosins: modulation of lymphokines, receptors, and T cell differentiation antigens. *Immunology Ser.* 45: 273-88 (1989)

**Schulof RS et al** Thymic peptide hormones: basic properties and clinical applications in cancer. *Critical Review of Oncol. Hematology* 3: 309-76 (1985)

**Sztejn MB and Goldstein AL** Thymic hormones - a clinical update. *Springer Semin. Immunopathol.* 9: 1-18 (1986)

**Galy AH et al** Effects of cytokines on human thymic epithelial cells in culture: IL1 induces thymic epithelial cell proliferation and change in morphology. *Cellular Immunology* 124: 13-27 (1989)

**Clinton M et al** The sequence of human parathymosin deduced from a cloned human kidney cDNA. *Biochemical and Biophysical Research Communications* 158: 855-62 (1989)

**Haritos AA et al** Parathymosin alpha: a peptide from rat tissues with structural homology to prothymosin alpha. *Proceedings of the National Academy of Science (USA)* 82: 1050-3 (1985)

**Frangou-Lazaridis M et al** Prothymosin alpha and parathymosin: amino acid sequences deduced from the cloned rat spleen cDNAs. *Archives of Biochemistry and Biophysics* 263: 305-10 (1988)

**Baxevanis CN et al** Enhancement of human T lymphocyte function by prothymosin alpha: increased production of interleukin-2 and expression of interleukin-2 receptors in normal human peripheral blood T lymphocytes. *Immunopharmacol. Immunotoxicol.* 12: 595-617 (1990)

**Baxevanis CN et al** Prothymosin alpha enhances human and murine MHC class II surface antigen expression and messenger RNA accumulation. *Journal of Immunology* 148: 1979-84 (1992)

**Baxevanis CN et al** Prothymosin alpha restores depressed allogeneic cell-mediated lympholysis and natural-killer-cell activity in patients with cancer. *International Journal of Cancer* 53: 264-8 (1993)

**Eschenfeldt WH and Berger SL** The human prothymosin alpha gene is polymorphic and induced upon growth stimulation: evidence using a cloned cDNA. *Proceedings of the National Academy of Science (USA)* 83: 9403-7 (1986)

**Eschenfeldt WH et al** Isolation and partial sequencing of the human prothymosin alpha gene family. Evidence against export of the gene products. *Journal of Biological Chemistry* 264: 7546-55 (1989)

**Grangou-Laxaridis M et al** Prothymosin alpha and parathymosin: amino acid sequences deduced from the cloned rat spleen cDNAs. *Archives of Biochemistry and Biophysics* 263: 305-10 (1988)

**Gomez-Marquez J and Segade F** Prothymosin alpha is a nuclear protein. *FEBS Letters* 226: 217-9 (1988)

**Haritos AA et al** Primary structure of rat thymus prothymosin alpha. Proceedings of the National Academy of Science (USA) 82: 343-6 (1985)

**Haritos AA et al** Prothymosin alpha and alpha 1-like peptides. Methods in Enzymology 116: 255-65 (1985)

**Makarova T et al** Prothymosin alpha is an evolutionary conserved protein covalently linked to a small RNA. FEBS Letters 257: 247-50 (1989)

**Palvimo J et al** Identification of a low-Mr acidic nuclear protein as prothymosin alpha. FEBS Letters 277: 257-60 (1990)

**Pan LX et al** Human prothymosin alpha: amino acid sequence and immunologic properties. Archives of Biochemistry and Biophysics 250: 197-201 (1986);

**Panneerselvam C et al** The amino acid sequence of bovine thymus prothymosin alpha. Archives of Biochemistry and Biophysics 265: 454-7 (1988)

**Szabo P et al** Prothymosin alpha gene in humans: organization of its promoter region and localization to chromosome 2. Human Genetics 90: 629-34 (1993)

**Auger G et al** Synthesis and biological activity of eight thymulin analogs. Biol. Chem. Hoppe-Seyler. 368: 463-70 (1987)

**Bach JF and Dardenne M** Thymulin, a zinc-dependent hormone. Med. Oncol. Tumor Pharmacother. 6: 25-9 (1989)

**Coto JA et al** Interleukin 1 regulates secretion of zinc-thymulin by human thymic epithelial cells and its action on T lymphocyte proliferation and nuclear protein kinase C. Proceedings of the National Academy of Science (USA) 89: 7752-6 (1992)

**Dardenne M et al** Neuroendocrine control of thymic hormonal production. I. Prolactin stimulates in vivo and in vitro the production of thymulin by human and murine thymic epithelial cells. Endocrinology 125: 3-12 (1989)

**Kobayashi H et al** Serum thymic factor as a radioprotective agent promoting survival after X-irradiation. Experientia 46: 484-6 (1990)

**Lenfant M et al** Relationship between a spleen-derived immunosuppressive peptide 'SDIP' and the 'Facteur thymique serique' ( FTS): biochemical and biological comparison of the two factors. Immunology 48: 635-45 (1983)

**Mocchegiani E et al** Recovery of low thymic hormone levels in cancer patients by lysine-arginine combination. International Journal of Immunopharmacology 12: 365-71 (1990)

**Safieh-Garabedian B et al** Thymulin and its role in immunomodulation. Journal of Autoimmun. 5: 547-55 (1992)



- Timsit J et al** Growth hormone and insulin-like growth factor-I stimulate hormonal function and proliferation of thymic epithelial cells. *Journal of Clinical Endocrinology and Metabolism* 75: 183-8 (1992)
- Barak Y et al** Thymic humoral factor-gamma 2, an immunoregulatory peptide, enhances human hematopoietic progenitor cell growth. *Experimental Hematology* 20: 173-7 (1992)
- Burstein Y et al** Thymic humoral factor gamma 2: purification and amino acid sequence of an immunoregulatory peptide from calf thymus. *Biochemistry* 27: 4066-71 (1988);
- Handzel ZT et al** Immunomodulation of T cell deficiency in humans by thymic humoral factor: from crude extract to synthetic thymic humoral factor-gamma 2. *Journal of Biol. Response Mod.* 9: 269-78 (1990)
- Indig FE et al** Hydrolysis of thymic humoral factor gamma 2 by neutral endopeptidase (EC 3.4.24.11). *Biochemical Journal* 278: 891-4 (1991)
- Ophir R et al** THF-gamma 2, a thymic hormone, increases immunocompetence and survival in 5-fluorouracil-treated mice bearing MOPC-315 plasmacytoma. *Cancer Immunology Immunother.* 30: 119-25 (1989)
- Ophir R et al** A synthetic thymic hormone, THF-gamma 2, repairs immunodeficiency of mice cured of plasmacytoma by melphalan. *International Journal of Cancer* 45: 1190-4 (1990)
- Umiel T et al** THF, a thymic hormone, promotes interleukin-2 production in intact and thymus-deprived mice. *Journal of Biol. Response. Mod.* 3: 423-34 (1984)
- Ernstrom U et al** Purification of thymocyte growth peptide (TGP) from sheep thymus. Relationship to FTS/thymulin. *Biosci. Rep.* 10: 403-12 (1990)
- Ernstrom U** Identification of a mammalian growth factor as a ribofolate peptide. *Biosci. Rep.* 11: 119-30 (1991)
- Balbi B et al** Thymomodulin increases release of granulocyte-macrophage colony stimulating factor and of tumor necrosis factor in vitro. *Eur. Respir. Journal* of 5: 1097-103 (1992)
- Balbi B et al** Thymomodulin increases HLA-DR expression by macrophages but not T lymphocyte proliferation in autologous mixed leukocyte reaction. *Eur. Respir. Journal* of 6: 102-9 (1993)
- Cavagni G et al** " Food allergy in children: an attempt to improve the effects of the elimination diet with an immunomodulating agent (thymomodulin). A double-blind clinical trial". *Immunopharmacol. Immunotoxicol.* 11: 131-42 (1989)
- Galli L et al** [ Preventive effect of thymomodulin in recurrent respiratory infections in children] *Pediatr. Med. Chir.* 12: 229-32 (1990)

**Kouttab NM et al** Thymomodulin: biological properties and clinical applications. *Med. Oncol. Tumor Pharmacother.* 6: 5-9 (1989)

**Maiorano V et al** Thymomodulin increases the depressed production of superoxide anion by alveolar macrophages in patients with chronic bronchitis. *International Journal of Tissue React.* 11: 21-5 (1989)

**Abiko T and Sekino H** Synthesis of the revised amino acid sequence of thymopoietin II and examination of its immunological effect on the impaired T lymphocyte transformation of a uremic patient with pneumonia. *Chem. Pharm. Bull. Tokyo.* 35: 2016-24 (1987)

**Abiko T** Syntheses and structure-activity relationships of thymopoietin. *Advances in Experimental Medicine and Biology* 223: 153-5 (1987)

**Audhya T et al** Complete amino acid sequences of bovine thymopoietins I, II, and III: closely homologous polypeptides. *Biochemistry* 20: 6195-200 (1981)

**Audhya T et al** Isolation and complete amino acid sequence of human thymopoietin and splenin. *Proceedings of the National Academy of Science (USA)* 84: 3545-9 (1987);

**Barcellini W et al** In vivo immunopotentiating activity of thymopentin in aging humans: modulation of IL2 receptor expression. *Clin. Immunology Immunopathol.* 48: 140-9 (1988)

**Bernengo MG et al** Thymopentin in Sezary syndrome [Journal of the National Cancer Institute](#) 84: 1341-6 (1992)

**Buzzetti R et al** Thymopentin induces release of ACTH-like immunoreactivity by human lymphocytes. *Journal of Clin. Lab. Immunology* 29: 157-9 (1989)

**Denes L et al** Selective restoration of immunosuppressive effect of cytotoxic agents by thymopoietin fragments. *Cancer Immunology Immunother.* 32: 51-4 (1990)

**Faist E et al** Immunomodulatory therapy with thymopentin and indomethacin. Successful restoration of interleukin-2 synthesis in patients undergoing major surgery. *Ann. Surg.* 214: 264-73 (1991)

**Fiorilli M et al** In vitro enhancement of bone marrow natural killer cells after incubation with thymopoietin<sub>32-36</sub> (TP-5). *Thymus* 5: 375-82 (1989)

**Goldstein G and Audhya TK** Thymopoietin to thymopentin: experimental studies. *Surv. Immunology Research* 4: s1-10 (1985)

**Hahn GS and Hamburger RN** Evolutionary relationship of thymopoietin to immunoglobulins and cellular recognition molecules. *Journal of Immunology* 126: 459-62 (1981)

**Heavner GA et al** Structural requirements for the biological activity of thymopentin analogs. *Archives of Biochemistry and Biophysics* 242: 248-55 (1985)

- Hu C et al** In vivo enhancement of NK-cell activity by thymopentin. *International Journal of Immunopharmacology* 12: 193-7 (1990)
- Kisfaludy L et al** Immuno-regulating peptides, I. Synthesis and structure-activity relationships of thymopentin analogs. *Hoppe-Seylers Zeitschrift für Physiologische Chemie* 364: 933-40 (1983)
- Lin CY and Low TL** A comparative study on the immunological effects of bovine and porcine thymic extracts: induction of lymphoproliferative response and enhancement of interleukin-2, gamma-interferon and tumor necrotic factor production in vitro on cord blood lymphocytes. *Immunopharmacology* 18: 1-10 (1989)
- Quik M et al** Thymopoietin, a thymic polypeptide, regulates nicotinic alpha-bungarotoxin sites in chromaffin cells in culture. *Mol. Pharmacol.* 37: 90-7 (1990);
- Rajnavolgyi E et al** The influence of new thymopoietin derivatives on the immune response of inbred mice. *International Journal of Immunopharmacology* 8: 167-77 (1986)
- Zevin-Sonkin D et al** Molecular cloning of the bovine thymopoietin gene and its expression in different calf tissues: evidence for a predominant expression in thymocytes. *Immunology Letters* 31: 301-9 (1992)
- Balleari E et al** In vivo hemopoietic activity of thymic extract 'Thymustimulin' in aged healthy humans. *Thymus* 19: 59-63 (1992)
- Ciconi E et al** [ Perioperative treatment with thymostimulin in patients with stomach and colorectal neoplasms. Our experience with 114 cases] *Minerva Chir.* 47: 939-40 (1992);
- Lai N et al** [ Postoperative infections: the use of thymostimulin (TP1) in patients at risk] *G. Chir.* 13: 377-8 (1992)
- Lin CY et al** Enhancement of interleukin-2 and gamma-interferon production in vitro on cord blood lymphocytes and in vivo on primary cellular immunodeficiency patients with thymic extract (thymostimulin). *Journal of Clin. Immunology* 8: 103-7 (1988);
- Mantovani G et al** [ Controlled trial of thymostimulin treatment of patients with primary carcinoma of the larynx resected surgically. Immunological and clinical evaluation and therapeutic prospects] *Recenti Progress in Med.* 83: 303-6 (1992)
- Surico N and Tavassoli K** Effect of immunostimulating therapy on the immunocompetent system in breast carcinoma. *Panminerva Med.* 34: 172-80 (1992)
- Tas MP et al** Depressed monocyte polarization and clustering of dendritic cells in patients with head and neck cancer: in vitro restoration of this immunosuppression by thymic hormones. *Cancer Immunology Immunother.* 36: 108-14 (1993)
- Tortorella C et al** Thymostimulin administration modulates polymorph metabolic pathway in patients with chronic obstructive pulmonary disease. *Immunopharmacol. Immunotoxicol.* 14: 421-37 (1992)

- Bao L et al** Thymosin beta 15: a novel regulator of tumor cell motility upregulated in metastatic prostate cancer. *Nature Medicine* 2(12): 1322-8 (1996)
- Bonnet D et al** Thymosin beta4, inhibitor for normal hematopoietic progenitor cells. *Experimental Hematology* 24(7): 776-82 (1996)
- Caldarella J et al** Thymosin alpha 11: a peptide related to thymosin alpha 1 isolated from calf thymosin fraction 5. *Proceedings of the National Academy of Science (USA)* 80: 7424-7 (1983)
- Cohen MH et al** Thymosin fraction 5 and intensive combination chemotherapy prolonging the survival of patients with small cell lung cancer. *JAMA* 241: 1813-21 (1979)
- Conlon JM et al** Isolation and structural characterization of thymosin-beta 4 from a human medullary thyroid carcinoma. *Journal of Endocrinology* 118: 155-9 (1988);
- Condon MR and Hall AK** Expression of thymosin beta-4 and related genes in developing human brain. *Journal of Mol. Neurosci.* 3: 165-70 (1992)
- Dugina TN et al** [ Thymosin alpha(1) - an endogenous modulator of alpha-thrombin recognition site] *Biull. Eksp. Biol. Med.* 114: 260-2 (1992)
- Erickson-Viitanen S et al** Thymosin beta 10, a new analog of thymosin beta 4 in mammalian tissues. *Archives of Biochemistry and Biophysics* 225: 407-13 (1983);
- Erickson-Viitanen S and Horecker BL** Thymosin beta 11: a peptide from trout liver homologous to thymosin beta 4. *Archives of Biochemistry and Biophysics* 233: 815-20 (1984)
- Galoyan AA et al** A hypothalamic activator of calmodulin-dependent enzymes is thymosin beta 4 (1-39). *Neurochem. Research* 17: 773-7 (1992)
- Gomez-Marquez J et al** Thymosin-beta 4 gene. Preliminary characterization and expression in tissues, thymic cells, and lymphocytes. *Journal of Immunology* 143: 2740-4 (1989)
- Gondo H et al** Differential expression of the human thymosin-beta 4 gene in lymphocytes, macrophages, and granulocytes. *Journal of Immunology* 139: 3840-8 (1987)
- Goodall GJ et al** Thymosin beta 4 in cultured mammalian cell lines. *Archives of Biochemistry and Biophysics* 221: 598-601 (1983)
- Goodall GJ and Horecker BL** Molecular cloning of the cDNA for rat spleen thymosin beta 10 and the deduced amino acid sequence. *Archives of Biochemistry and Biophysics* 256: 402-5 (1987)
- Hall AK** Developmental regulation of thymosin beta 10 mRNA in the human brain. *Brain Research Molecular Brain Research* 9: 175-7 (1991)

- Hannappel E et al** Thymosins beta 8 and beta 9: two new peptides isolated from calf thymus homologous to thymosin beta 4. 79: 1708-11 (1982)
- Haritos AA** alpha-thymosins: relationships in structure, distribution, and function. *Isozymes Curr. Top. Biol. Med. Research* 14: 123-52 (1987)
- Ho AD et al** Terminal differentiation of cord blood lymphocytes induced by thymosin fraction 5 and thymosin alpha 1. *Scandinavian Journal of Immunology* 21: 221-5 (1985);
- Horecker BL et al** Thymosin beta 4-like peptides. *Methods in Enzymology* 116: 265-9 (1985)
- Hu SK et al** Thymosin enhances the production of IL1 alpha by human peripheral blood monocytes. *Lymphokine Research* 8: 203-14 (1989)
- Kouttab NM et al** Production of human B and T cell growth factors is enhanced by thymic hormones. *Immunopharmacology* 16: 97-105 (1988)
- Leichtling KD et al** Thymosin alpha 1 modulates the expression of high affinity interleukin-2 receptors on normal human lymphocytes. *International Journal of Immunopharmacology* 12: 19-29 (1990)
- Low TL et al** Complete amino acid sequence of bovine thymosin beta 4: a thymic hormone that induces terminal deoxynucleotidyl transferase activity in thymocyte populations. *Proceedings of the National Academy of Science (USA)* 78: 1162-6 (1981);
- Low TL and Goldstein AL** Thymosin beta 4. *Methods in Enzymology* 116: 248-55 (1985)
- Low TL and Goldstein AL** Thymosin alpha 1 and polypeptide beta 1. *Methods in Enzymology* 116: 233-48 (1985)
- Low TL and Goldstein AL** Thymosin fraction 5 and 5A. *Methods in Enzymology* 116: 219-339 (1985)
- Low TL and Goldstein AL** Thymosins: structure, function and therapeutic applications. *Thymus* 6: 27-42 (1984)
- Low TL et al** Primary structure of thymosin beta 12, a new member of the beta-thymosin family isolated from perch liver. *Archives of Biochemistry and Biophysics* 293(1): 32-9 (1992)
- McCreary V et al** Sequence of a human kidney cDNA clone encoding thymosin beta 10. *Biochemical and Biophysical Research Communications* 152: 862-6 (1988)
- Moody TW et al** Thymosin alpha 1 down-regulates the growth of human non-small cell lung cancer cells in vitro and in vivo. *Cancer Research* 53: 5214-8 (1993)
- Moscinski LC et al** Identification of a series of differentiation-associated gene sequences from GM-CSF-stimulated bone marrow. *Oncogene* 5: 31-7 (1990)

- Mutchnick MG et al** Thymosin treatment of chronic hepatitis B: a placebo-controlled pilot trial. *Hepatology* 14: 409-15 and 567-9 (1991)
- Noguchi K et al** Antitumor activity of a novel chimera tumor necrosis factor (TNF-STH) constructed by connecting rTNF-S with thymosin beta 4 against murine syngeneic tumors. *Journal of Immunother.* 10: 105-11 (1991)
- Oates KK and Coss MC** Biochemical and immunohistological identification of thymosin alpha-1 in MCF-7 breast cancer cells. *Thymus* 17: 147-54 (1991)
- Ohta Y et al** Thymosin-alpha 1 increases the capability to produce interleukin-3 but not interleukin-2 in nu/nu mice. *Journal of Biol. Response Mod.* 6: 181-93 (1987)
- Serrate SA et al** Modulation of human natural killer cell cytotoxic activity, lymphokine production, and interleukin 2 receptor expression by thymic hormones. *Journal of Immunology* 139: 2338-43 (1987)
- Shimamura R et al** Expression of the thymosin beta 4 gene during differentiation of hematopoietic cells. *Blood* 76: 977-84 (1990)
- Spangelo BL et al** Biology and chemistry of thymosin peptides. Modulators of immunity and neuroendocrine circuits. *Annals of the New York Academy of Science* 496: 196-204 (1987)
- Spangelo BL et al** Thymosin fraction 5 stimulates prolactin and growth hormone release from anterior pituitary cells in vitro. *Endocrinology* 121: 2035-43 (1987)
- Sztein MB and Serrate SA** Characterization of the immunoregulatory properties of thymosin alpha 1 on interleukin-2 production and interleukin-2 receptor expression in normal human lymphocytes. *International Journal of Immunopharmacology* 11: 789-800 (1989)
- Talmadge JE et al** Thymosin: immunomodulatory and therapeutic characteristics. *Progress in Clinical and Biological Research* 161: 457-65 (1984)
- Tzehoval E et al** Thymosins alpha 1 and beta 4 potentiate the antigen-presenting capacity of macrophages. *Immunopharmacology* 18: 107-13 (1989)
- Wang SH et al** Effects of thymosin and insulin on suppressor T cell in type 1 diabetes. *Diabetes Research* 19: 21-9 (1992)
- Watts JD et al** Thymosins: both nuclear and cytoplasmic proteins. *European Journal of Biochemistry* 192: 643-51 (1990)
- Weterman MA et al** Thymosin beta-10 expression in melanoma cell lines and melanocytic lesions: a new progression marker for human cutaneous melanoma. *International Journal of Cancer* 53: 278-84 (1993)

**Wetzel R et al** Production of biologically active N alpha-desacetylthymosin alpha 1 in Escherichia coli through expression of a chemically synthesized gene. *Biochemistry* 19: 6096-104 (1980)

**Yialouris PP et al** The complete sequences of trout (*Salmo gairdneri*) thymosin beta 11 and its homologue thymosin beta 12. *Biochemical Journal* 283(2): 385-9 (1992)

## T-helper

**Bonecchi R et al** Differential expression of chemokine receptors and chemotactic responsiveness of type 1 T helper cells (Th1s) and Th2s. *Journal of Experimental Medicine* 187: 129-134 (1998)

**Bottomly K** A functional dichotomy in CD4 + T lymphocytes [Immunology Today](#) 9: 268-74 (1988)

**Clerici M and Shearer GM** A Th1 to Th2 switch is a critical step in the etiology of HIV infections [Immunology Today](#) 14: 107-111 (1993)

**Kelso A et al** Heterogeneity in lymphokine profiles of CD4 + and CD8 + T cells and clones activated in vivo and in vitro. *Immunological Reviews* 123: 85-114 (1991);

**Loetscher P et al** The ligands of CXC chemokine receptor 3, I-TAC, mig, and IP10, are natural antagonists for CCR3. *Journal of Biological Chemistry* 276(5): 2986-91 (2001);

**Mosmann TR et al** Two types of murine helper T cell clone. I. Definition according to profiles of lymphokine activities and secreted proteins. *Journal of Immunology* 136: 2348-57 (1986)

**Mosmann TR and Coffman RL** Heterogeneity of cytokine secretion patterns and functions of helper T cells. *Advances in Immunology* 111-47 (1989)

**Mosmann TR and Coffman RL** Th1 and Th2 cells: different patterns of lymphokine secretion lead to different functional properties. *Annual Review of Immunology* 7: 145-73 (1989)

**Romagnani S** Human Th1 and Th2 subsets: doubt no more [Immunology Today](#) 12: 256-7 (1991)

**Trinchieri G et al** Interleukin-12 and its role in the generation of Th1 cells [Immunology Today](#) 14: 335-8 (1993)

**Weiner HL** Induction and mechanism of action of transforming growth factor-beta-secreting Th3 regulatory cells. *Immunological Reviews* 182(1): 207-14 (2001)

# Thrombocidin-1

**Krijgsveld J et al** Thrombocidins, microbicidal proteins from human blood platelets, are C-terminal deletion products of CXC chemokines. *Journal of Biological Chemistry* 275: 20374-20381 (2000)

# Calgranulins

**Dorin JR et al** Related calcium-binding proteins map to the same subregion of chromosome 1q and to an extended region of synteny on mouse chromosome 3. *Genomics* 8: 420-426 (1990)

**Dorin JR et al** A clue to the basic defect in cystic fibrosis from cloning the CF antigen gene *Nature (London)* 326: 614-617 (1987)

**Goebeler M et al** Expression and complex assembly of calcium-binding proteins MRP8 and MRP14 during differentiation of murine myelomonocytic cells. *Journal of Leukocyte Biology* 53: 11-18 (1993)

**Gottsch JD et al** Cytokine-induced calgranulin C expression in keratocytes. *Clinical Immunology* 91(1): 34-40 (1999)

**Hofmann MA et al** RAGE mediates a novel proinflammatory axis: a central cell surface receptor for S100/calgranulin polypeptides. *Cell* 97: 889-901 (1999)

**Ilg EC et al** Amino acid sequence determination of human S100A12 (P6, Calgranulin C, CGRP, CAAF1) by tandem mass spectrometry. *Biochemical Biophysical Research Communications* 225: 146-150 (1996)

**Kelly SE et al** Calgranulin expression in inflammatory dermatoses. *Journal of Pathology* 159: 17-21 (1989)

**Lagasse E and Weissman IL** Mouse MRP8 and MRP14, two intracellular calcium-binding proteins associated with the development of the myeloid lineage. *Blood* 79: 1907-1915 (1992)

**Kelly SE et al** Morphological evidence for calcium-dependent association of calgranulin with the epidermal cytoskeleton in inflammatory dermatoses. *British Journal of Dermatology* 124: 403-409 (1991)

**Marti T et al** Host-parasite interaction in human onchocerciasis: identification and sequence analysis of a novel human calgranulin. *Biochemical Biophysical Research Communications* 221: 454-458 (1996)



**Odink K et al** Two calcium-binding proteins in infiltrate macrophages of rheumatoid arthritis *Nature (London)* 330: 80-82 (1987)

**Rammes A et al** Myeloid-related protein (MRP) 8 and MRP14, calcium-binding proteins of the S100 family, are secreted by activated monocytes via a novel, tubulin-dependent pathway. *Journal of Biological Chemistry* 272(14): 9496-9502 (1997)

**Roth J et al** Expression of calcium-binding proteins MRP8 and MRP14 is associated with distinct monocytic differentiation pathways in HL-60 cells. *Biochemical and Biophysical Research Communications* 191: 565-570 (1993)

**Schafer BW et al** Isolation of a YAC clone covering a cluster of nine S100 genes on human chromosome 1q21: rationale for a new nomenclature of the S100 calcium-binding protein family. *Genomics* 25: 638-643 (1995)

**Tsui FWL et al** Molecular characterization and mapping of murine genes encoding three members of the stefin family of cysteine proteinase inhibitors. *Genomics* 15: 507-514 (1993)

**van Heyningen V and Dorin J** Possible role for two calcium-binding proteins of the S-100 family, co-expressed in granulocytes and certain epithelia. *Advances in Experimental Medicine and Biology* 269: 139-143 (1990)

**Warner-Bartnicki AL et al** Regulated expression of the MRP8 and MRP14 genes in human promyelocytic leukaemic HL-60 cells treated with the differentiation-inducing agents mycophenolic acid and 1 $\alpha$ ,25-dihydroxyvitamin D<sub>3</sub>. *Experimental Cell Research* 204: 241-246 (1993)

**Wicki R et al** Characterization of the human S100A12 (calgranulin C, p6, CAAF1, CGRP) gene, a new member of the S100 gene cluster on chromosome 1q21. *Cell Calcium* 20: 459-464 (1996)

**Wilkinson MM et al** Expression pattern of two related cystic fibrosis-associated calcium-binding proteins in normal and abnormal tissues. *Journal of Cell Science* 91: 221-230 (1988)

**Zwadlo G et al** Two calcium-binding proteins associated with specific stages of myeloid cell differentiation are expressed by subsets of macrophages in inflammatory tissues. *Clinical and Experimental Immunology* 72: 510-515 (1988)

## NAP-2

**Ahuja SK and Murphy PM** The CXC chemokines growth-regulated oncogene (GRO) alpha, GRObeta, GROgamma, neutrophil-activating peptide-2, and epithelial cell-derived neutrophil-activating peptide-78 are potent agonists for the type B, but not the type A,

human interleukin-8 receptor. *Journal of Biological Chemistry* 271(34): 20545-20550 (1996)

**Brandt E et al** A novel molecular variant of the neutrophil-activating peptide NAP-2 with enhanced biological activity is truncated at the C-terminus: identification by antibodies with defined epitope specificity. *Mol. Immunology* 30: 30: 979-91 (1993);

**Car BD et al** Formation of neutrophil-activating peptide 2 from platelet-derived connective-tissue-activating peptide III by different tissue proteinases. *Biochemical Journal* 275: 581-4 (1991)

**Clark-Lewis I et al** Chemical synthesis, purification, and characterization of two inflammatory proteins, neutrophil activating peptide 1 and neutrophil activating peptide 2. *Biochemistry* 30: 3128-35 (1991)

**Cohen AB et al** Generation of the neutrophil-activating peptide-2 by cathepsin G and cathepsin G-treated human platelets. *American Journal of Physiology* 263: L249-56 (1992)

**Holt JC et al** Isolation, characterization, and immunological detection of neutrophil-activating peptide 2: A proteolytic degradation product of platelet basic protein. *Proceedings of the Society for Experimental Biology and Medicine* 199: 171-7 (1992);

**Leonard EJ et al** Chemotactic activity and receptor binding of neutrophil attractant/activation protein (NAP-1) and structurally related host defense cytokines: interaction of NAP-2 with the NAP-1 receptor. *Journal of Leukocyte Biology* 49: 258-65 (1991)

**Moser B et al** Neutrophil-activating peptide 2 and gro/melanoma growth-stimulatory activity interact with neutrophil-activating peptide 1/interleukin 8 receptors on human neutrophils. *Journal of Biological Chemistry* 266: 10666-71 (1991)

**Reddigari SR et al** Connective tissue-activating peptide-III and its derivative, neutrophil-activating peptide-2, release histamine from human basophils. *Journal of Allergy Clin. Immunology* 89: 666-72 (1992)

**Van Damme J et al** The neutrophil-activating proteins interleukin 8 and beta-thromboglobulin: in vitro and in vivo comparison of NH<sub>2</sub>-terminally processed forms. *European Journal of Immunology* 20: 2113-8 (1990)

**Waltz A and Baggiolini M** A novel cleavage product of beta-thromboglobulin formed in cultures of stimulated mononuclear cells activates human neutrophils. *Biochemical and Biophysical Research Communications* 159: 969-75 (1986)

**Walz A et al** Effects of neutrophil-activating peptide NAP-2, platelet basic protein, connective tissue-activating peptide III, and platelet factor 4 on human neutrophils. *Journal of Experimental Medicine* 170: 1745-50 (1989)

**Waltz A and Baggiolini M** Generation of the neutrophil-activating peptide NAP-2 from platelet basic protein or connective tissue-activating peptide III through monocyte proteases. *Journal of Experimental Medicine* 171: 449-54 (1990)

**Walz A** Generation and properties of neutrophil-activating peptide 2. *Cytokines* 4: 77-95 (1992)