

BIRGITTE MUNCH-PETERSEN

Total number of peer-reviewed publications listed in medline: 73

Doctoral Thesis 1996 (Dr. Scient. afhandling)

One Book Chapter 2006

Five patents and patent applications

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Peer-reviewed publications, book chapters and Doctoral thesis:

1. Tyrsted, G., Munch-Petersen, B., Cloos, L. DNA polymerase activity in Phytohemagglutinin-stimulated and non-stimulated human lymphocytes. *Exptl. Cell Res.* 77: 415-427, 1973.
2. Munch-Petersen, B., Tyrsted, G., Dupont, B. The deoxyribonucleoside 5'-triphosphate (dATP and dTTP) pool in Phytohemagglutinin-stimulated and non-stimulated human lymphocytes. *Exptl. Cell Res.* 79: 249-256, 1973.
3. Tyrsted, G., Munch-Petersen, B. Early effects of Phytohemagglutinin on induction of DNA polymerase, thymidine kinase, deoxyribonucleoside triphosphate pools and DNA synthesis in human lymphocytes. *Nucleic Acids Res.* 4: 2713-2723, 1977.
4. Munch-Petersen, B., Tyrsted, G. Induction of thymidine kinases in Phytohemagglutinin stimulated human lymphocytes. *Biochim. Biophys. Acta* 478: 364-375, 1977.
5. Munch-Petersen, B. Differences in the kinetic properties of thymidine kinase isoenzymes in unstimulated and Phytohemagglutinin stimulated lymphocytes. *Mol. Cell. Biochem.* 64: 173-185, 1984.
6. Bjerrum, O.W., Gjedde, S.B. Bendtzen, K., Enk, C., Klarlund Pedersen, B.K., Munch-Petersen, B., Platz, P., Wulf, H.C. Case report: An unusual case of multiple malignancies in an adult. *Tumori* 70: 575-577, 1984.
7. Munch-Petersen, B., Wallevik, K., Faber, M. Seasonal variations in UVR induced DNA synthesis and in UVR inhibition of Phytohemagglutinin stimulated proliferation of human lymphocytes. *Scand. J. Clin. Lab. Invest.* 45: 3-44, 1985.
8. Munch-Petersen, B., Frentz, G., Squire, B., Wallevik, K., Claussen Horn, C., Reyman, F., Faber, M. Abnormal lymphocyte response to UV radiation in multiple skin cancer. *Carcinogenesis* 6: 843-845, 1985.
9. Munch-Petersen, B., Tyrsted, G. Thymidine kinase isoenzymes in human acute monocytic leukemia. *Mol. Cell. Biochem.* 66: 185-191, 1985.
10. Munch-Petersen B., Frentz, G. Different cellular X-ray and UV-radiation sensitivity in multiple malignant epidermal cancer with a correlation to previous radiation exposure. *Radiat. Res.* 103: 432-440, 1985.
11. Munch-Petersen, B., Tyrsted, G. Thymidine kinase isoenzymes in human acute and chronic lymphatic leukemia. *Leukemia Res.* 10: 637-642, 1986.
12. Lund-Kofoed, M., Munch-Petersen B., Larsen, J.K., Lange-Wantzin, G. Non-replicative DNA synthesis detected in peripheral lymphocytes from a patient with actinic reticuloid. *Photodermatology* 3: 158-162, 1986.
13. Larsen, J.K., Munch-Petersen, B., Christiansen, J., Jørgensen, K. Flow cytometric discrimination of mitotic nuclei with mithramycin, propidium iodide, and ethidium iodide after fixation with formaldehyde. *Cytometry* 7: 54-63, 1986.

14. Frenzt, G., Wulf, H.C., Munch-Petersen, B., Niebuhr, E. Normal sister chromatid exchange in lymphocytes from patients with multiple epidermal cancer?. *Arch. Dermatol. Res.* 279: 180-183, 1987.
15. Tyrsted, G., Chao, P-c., Munch-Petersen, B. Deoxycytidylate deaminase activity in non-stimulated and Phytohemagglutinin stimulated human lymphocytes, and in leukemic cells. *Mol. Cell. Biochem.* 76: 27-34, 1987.
16. Frenzt, G., Munch-Petersen, B., Wulf, H. C., Niebuhr, E., Bang, F. The nevoid basal cell carcinoma syndrome. Cellular UVC and X-ray irradiation. *J. Amer. Acad. Dermatol.* 17: 637-642, 1987.
17. Frenzt, G., Bang, F., Munch-Petersen, B., Lange-Wantzin, G. Increased suppressor T cell number in sun-induced multiple skin cancer in man. *Giornale Italiano di Chirurgia Dermatologica ed Oncologica* 2, 292-293, 1987.
18. Wærstad, A., Munch-Petersen, B., Frenzt, G. Abnormal lymphocytic respnse to Uv radiation and X-ray in multiple skin cancer. *Acta Derm-Venereol (Stockholm) suppl.* 134, 49-52, 1987
19. Munch-Petersen, B., Tyrsted, G. Thymidine kinase in human leukemia: Expression of the lymphoblastic isoenzyme in three patients with acute myelocytic leukemia. *Leukemia Res.* 12: 173-178, 1988.
20. Munch-Petersen, B. Azidothymidine inhibits mitogen stimulated growth and DNA-repair in human peripheral lymphocytes. *Biochem. Biophys. Res. Comm.* 157: 1369-1375, 1988.
21. Frenzt, G., Bang, F., Munch-Petersen, B., Lange-Wantzin, G. Increased number of circulating suppressor T-lymphocytes in sun-induced multiple skin cancers. *Cancer* 61, 294-297, 1988.
22. Munch-Petersen, B. Thymidine kinase in human leukemia - Expression of three isoenzyme variants in six patients with chronic myelocytic leukemia. *Leukemia Res.* 14, 39-45, 1990
23. Munch-Petersen, B., Cloos, L., Tyrsted, G., Eriksson, S. Diverging substrate specificity of human thymidine kinase 1 and 2 against antiviral dideoxynucleosides. *J. Biol. Chem.* 266, 9032-9038, 1991.
24. Eriksson, S., Kierdaszuk, B., Munch-Petersen, B., Öberg, B., Johansson, N.G. Comparison of the substrate specificities of human thymidine kinase 1 and 2 and deoxycytidine kinase towards antiviral and cytostatic nucleoside analogs. *Biochem. Biophys. Res. Com.* 176, 586-592, 1991.
25. Eriksson, S. Munch-Petersen, B. Kierdaszuk, and E. Arnér. Expression and substrate specificities of human thymidine kinase 1, thymidine kinase 2 and deoxycytidine kinase; *Adv. Exp. Med. Biol.* 309B, 239-243, 1991.
26. Jansson O., Bohman C., Munch-Petersen B., Eriksson S. Mammalian thymidine kinase 2: Direct photoaffinity labeling with (³²P)-dTTP of the enzyme from spleen, heart and brain. *Europ. J. Biochem.* 206, 485-490, 1992.
27. Munch-Petersen, B., Cloos, L., Tyrsted, G. Reversible ATP dependent transition between two forms of pure, human cytosolic thymidine kinase (TK1) with different enzymatic properties. *J. Biol. Chem.* 268, 15621-15625, 1993.
28. Bech-Thomsen, N., Munch-Petersen, B., Lundgren, K., Poulsen, T., Wulf, H.C. UV induced alterations in skin and lymphocytes during a weeks holiday on the Canarian islands in may. *Acta Derm. Venereol.* 73, 422-425, 1993.

29. Kristensen, T., Jensen, H.K., Munch-Petersen, B. Overexpression of mRNA for cytosolic thymidine kinase in human chronic lymphocytic leukemic cells without corresponding enzyme activity. *Leukemia Res.* 18, 861-866, 1994.
30. THE EUROPEAN THYMIDINE KINASE STUDY GROUP: Barnett, Y.A., Eger, K., Eriksson, S., Folkers, G., Hansen, P.E., Hofbauer, R., Komitovsky, D., Milon, A., Munch-Petersen, B. Gene Technology-based antimetabolite design: The use of an in vitro protein expression system to facilitate antimetabolite design for virally-induced human diseases and malignant conditions. *Biotech. Adv.* 12, 663-668, 1994.
31. Kristensen, T., Jensen, H.K., Munch-Petersen, B. Quantitation of TK1 mRNA in patients with chronic lymphatic leukemia; *Adv. Exp. Med. Biol.* 370, 23-26, 1995.
32. Munch-Petersen, B., Völker, C., Cloos, L., Hofbauer, R., Mortensen, B.T., Tyrsted, G. Altered substrate and inhibitor specificity of purified human adult thymidine kinases (TK2) from leukemic cells. *Adv. Exp. Med. Biol.* 370, 253-256, 1995.
33. Jensen H.K., Munch-Petersen B. Altered kinetic properties of recombinant human cytosolic thymidine kinase (TK1) as compared with the native form; *Adv. Exp. Med. Biol.* 370, 637-640, 1995.
34. Nielsen, S.E., Munch-Petersen, B. Mejer, J. Differences in deoxycytidine/thymidine kinase 2 ratio in CLL and normal lymphocytes; *Adv. Exp. Med. Biol.* 370, 257-259, 1995.
35. Munch-Petersen, B., Cloos, L., Jensen, H.K., Tyrsted, G. Human thymidine kinase 1. Regulation in normal and malignant cells. *Advan. Enzyme Regul.* 35, 69-89, 1995.
36. Nielsen, S.E.N., Munch-Petersen, B., Mejer, J. Increased ratio between deoxycytidine and thymidine kinase 2 ratio in CLL lymphocytes compared to normal lymphocytes. *Leukemia Res.* 19, 443-447, 1995.
37. Munch-Petersen, B., Tyrsted, G., Cloos, L., Beck, R. A., Eger, K. Different affinity of the two forms of human cytosolic thymidine kinase towards pyrimidine analogs. *Biochim. Biophys. Acta* 1250, 158-162 1995.
38. Krawiec, K., Kierdaszuk, B., Eriksson, S., Munch-Petersen, B., Shugar, D. Nucleoside triphosphate donors for nucleoside kinases: Donor properties of UTP with human deoxycytidine kinase, *Biochem. Biophys. Res. Comm.* 216, 42-48, 1995.
39. Munch-Petersen, B. DNA precursor pool balance and thymidine kinase isoenzymes in normal and malignant cells. Enzymatic regulation mechanisms and clinical therapeutic applications. Doctor of Science thesis. Roskilde University. ISBN 87-7349-325-2 1996.
40. Beck, R. A., Munch-Petersen, B., Dölker, M. Cloos, L., Tyrsted, G. and Eger, K. Ligands for the Affinity Chromatography of Mammalian Thymidine Kinase 1: Strategy, Synthesis and Tests. *Acta Helvetica Chimica*, 71, 279-291, 1996.
41. Munch-Petersen, B. Thymidine in the micromolar range promotes rejoining of UVC-induced DNA strand-breaks and prevents azidothymidine from inhibiting the rejoining in quiescent human lymphocytes. *Mutation Res. DNA Repair.* 383, 143-153, 1997.
42. Munch-Petersen, B., Piškur, J. and Søndergaard, L. Four deoxynucleoside kinase activities from *Drosophila melanogaster* are contained within a single monomeric enzyme, a new multifunctional deoxynucleoside kinase. *J. Biol. Chem.* 273, 3926-3931, 1998.
43. Kierdaszuk, B., Krawiec, K., Kazimierzczuk, Z., Jacobsson, U., Johansson, N.G., Munch-Petersen, B., Eriksson S., Shugar, D. Substrate/inhibitor specificities of human deoxycytidine kinase (dCK) and thymidine kinases. *Adv Exp Med Biol* 431, 623-627, 1998.

44. Munch-Petersen, B., Piškur, J., Søndergaard, L. The single deoxynucleoside kinase in *Drosophila melanogaster*, Dm-dNK, is multifunctional and differs from the mammalian deoxynucleoside kinases. *Adv. Exp. Med. Biol.* 431, 465-469, 1998.
45. Munch-Petersen, B. Effect of deoxynucleosides on the repair of UV induced DNA breaks. *Adv Exp Med Biol.* 431, 471-474, 1998.
46. Wang, L., Munch-Petersen, B., Herrstrom Sjöberg, A., Hellman, U., Bergman, T., Jorvall, H., Eriksson, S.: Human thymidine kinase 2: molecular cloning and characterisation of the enzyme activity with antiviral and cytostatic nucleoside substrates. *FEBS Letters.* 443, 170-174, 1999.
47. Kierdaszuk, B., Krawiec, K., Kazimierczuk, Z., Jacobsson, U., Johansson, N. G., Munch-Petersen, B., Eriksson, S., Shugar, D. Substrate/inhibitor properties of human deoxycytidine kinase (dCK) and thymidine kinases (TK1 and TK2) towards the sugar moiety of nucleosides, including new o'-alkyl analogues. *Nucleosides and Nucleotides.* 18, 1883-1903, 1999.
48. Munch-Petersen, B., Knecht, W., Lenz, C., Søndergaard, L., Piškur, J. Functional expression of a multisubstrate deoxyribonucleoside kinase from *Drosophila melanogaster* and its C-terminal deletion. *J.Biol.Chem.*, 275, 6673-6679, 2000.
49. Knecht, W., Munch-Petersen, B. and Piškur, J. Identification of residues involved in the specificity and regulation of the *Drosophila* ultrafast multisubstrate deoxyribonucleoside kinase. *J. Mol. Biol.* 301, 827-837, 2000.
50. Berenstein, D., Christensen, J.F., Kristensen, T., Hofbauer, R. and Munch-Petersen, B. Valine, not Methionine, is amino acid 106 in human cytosolic thymidine kinase (TK1) - impact on oligomerisation, stability and kinetic properties. *J. Biol. Chem.* 275, 32187-92, 2000.
51. Knecht, W. Munch-Petersen, B. and Piškur, J. Polyclonal antibodies against the ultrafast multisubstrate deoxyribonucleoside kinase from *Drosophila melanogaster*. *Adv Exp Med Biol*, 486, 263-266, 2000.
52. Bergman, A.M., Munch-Petersen, B., Jensen, P.B., Sehested, M., Veerman, G., Voorn, D.A., Pinedo, H.M., and Peters, G.J., Collateral sensitivity to gemcitabine (2',2'-difluorodeoxycytidine) and cytosine arabinoside of daunorubicin and VM-26 resistant variants of human small cell lung cancer cell lines, *Biochem. Pharmacol.* 61, 1401-1408, 2001.
53. Johansson, K., Ramaswamy, S., Ljungcrantz, C., Knecht, W., Piškur, J., Munch-Petersen, B., Eriksson, S., and Eklund, H. Structural basis for substrate specificity of cellular deoxynucleoside kinases. *Nat. Struct. Biol.* 8, 616-620, 2001
54. Knecht, W., Petersen, G.E., Munch-Petersen, B. and Piškur, J. Animal deoxyribonucleoside kinases belonging to the thymidine kinase 2 (TK2) -like group vary significantly in substrate specificity, kinetics and feed-back regulation. *J. Mol. Biol.* 315, 529-540, 2002
55. Eriksson, S., B. Munch-Petersen, K. Johansson, and H. Eklund. Structure and function of cellular deoxyribonucleoside kinases. Review. *Cell. Mol. Life Sci.* 59, 327-46. 2002.
56. Knecht, W., M.P. Sandrini, K. Johansson, H. Eklund, B. Munch-Petersen, and J. Piškur. A few amino acid substitutions can convert deoxyribonucleoside kinase specificity from pyrimidines to purines. *EMBO J.* 21:1873-1880, . 2002.
57. Knecht, W., G.E. Petersen, M.P. Sandrini, L. Søndergaard, B. Munch-Petersen, and J. Piškur. Mosquito has a single multisubstrate deoxyribonucleoside kinase characterized by unique substrate specificity. *Nucleic Acids Res.* 31:1665-1672, 2003.
58. Krawiec, K., B. Kierdaszuk, E.N. Kalinichenko, E.B. Rubinova, I.A. Mikhailopulo, S. Eriksson, B. Munch-Petersen, and D. Shugar. 2003. Striking ability of adenosine-2'(3')-deoxy-3'(2')-triphosphates and related analogues to replace ATP as phosphate donor for all four human, and the *Drosophila melanogaster*, deoxyribonucleoside kinases. *Nucleosides Nucleotides Nucleic Acids* 22:153-173. 2003.

59. Mikkelsen, N.E., K.Johansson, A.Karlsson, W.Knecht, G.Andersen, J.Piskur, B.Munch-Petersen, and H.Eklund. Structural basis for feedback inhibition of the deoxyribonucleoside salvage pathway: studies of the *Drosophila* deoxyribonucleoside kinase. *Biochemistry* 42:5706-5712, 2003
60. Krawiec K, Kierdaszuk B, Kalinichenko EN, Rubinova EB, Mikhailopulo IA, Eriksson S, Munch-Petersen B, Shugar D. Ability of adenosine-2'(3')-deoxy-3'(2')-triphosphates and related analogues to replace ATP as phosphate donor for all human and *Drosophila melanogaster* deoxyribonucleoside kinases. *Nucleosides Nucleotides Nucleic Acids* 22:1525-1529, 2003
61. Piskur J, Sandrini MP, Knecht W, Munch-Petersen B. Animal deoxyribonucleoside kinases: 'forward' and 'retrograde' evolution of their substrate specificity. *FEBS Lett* 560:3-6, 2004
62. Frederiksen, H., Berenstein, D., Munch-Petersen, B. Impact of Valine 106 on structure-function relationship of cytosolic human thymidine kinase (TK1): Kinetic properties and oligomerization pattern of nine substitution mutants of V106. *Eur. J. Biochem.* 271, 2248-2256, 2004
63. Welin, M., Kosinska, U., Mikkelsen, N.E., Carnrot, C., Zhu, C., Wang, L., Eriksson, S., Munch-Petersen, B., Eklund, H. Structures of thymidine kinase 1 of human and mycoplasmic origin. *Proc.Natl.Acad.Sci U.S A* 101, 17970-17975, 2004
64. Welin, M., Skovgaard, T., Knecht, W., Zhu, C., Berenstein, D., Munch-Petersen, B., Piskur, J., Eklund, H. Structural basis for the changed substrate specificity of *Drosophila melanogaster* deoxyribonucleoside kinase mutant N64D. *FEBS J.* 272, 3733-3742, 2005..
65. Munch-Petersen B, and Piskur, J (2006) Deoxynucleoside kinases and their potential role in deoxynucleoside cytotoxicity. In *Cancer drug discovery and development: Deoxynucleoside analogs in cancer therapy.* Peters,G.J. (ed). Totowa, NJ.: Humana Press, pp. 53-79.
66. Sandrini MP, Clausen AR, Munch-Petersen B and Piskur J . 2006. Thymidine kinase diversity in bacteria. *Nucleosides Nucleotides Nucleic Acids* 25: 1153-1158.
67. Skovgaard T and Munch-Petersen B . 2006. Purification and characterization of wild-type and mutant TK1 type kinases from *Caenorhabditis elegans*. *Nucleosides Nucleotides Nucleic Acids* 25: 1165-1169.
68. Desler C, Munch-Petersen B and Rasmussen LJ . 2006. The role of mitochondrial dNTP levels in cells with reduced TK2 activity. *Nucleosides Nucleotides Nucleic Acids* 25: 1171-1175.
69. Zhu C, Harlow LS, Berenstein D, Munch-Petersen S and Munch-Petersen B . 2006. Effect of C-terminal of human cytosolic thymidine kinase (TK1) on in vitro stability and enzymatic properties. *Nucleosides Nucleotides Nucleic Acids* 25: 1185-1188.
70. Egeblad-Welin L, Sonntag Y, Eklund H and Munch-Petersen B . 2007. Functional studies of active-site mutants from *Drosophila melanogaster* deoxyribonucleoside kinase 1. *FEBS J* 274: 1542-1551.
71. Knecht W, Rozpedowska E, Le Breton C, Willer M, Gojkovic Z, Sandrini MPB, Joergensen T, Hasholt L, Munch-Petersen B and Piskur J. 2007. *Drosophila* deoxyribonucleoside kinase mutants with enhanced ability to phosphorylate purine analogs. *Gene Therapy* 14 (2007) 1278-1286.
72. Sandrini M, Piskur J, Clausen A, Aarestrup F, On S, Munch-Petersen B. Nucleoside analogs are activated by bacterial deoxyribonucleoside kinases in a species specific manner. *J. Antimicrobial. Chemother.* 60 (2007) 510-520.
73. Desler C, Munch-Petersen B, Stevnsner T, Matsui S, Kulawiec M, Singh KK, & Rasmussen LJ (2007) Mitochondria as determinant of nucleotide pools and chromosomal stability. *Mutat. Res.*, 625, 112-124.
74. Mikkelsen,N.E., Munch-Petersen,B., and Eklund,H. (2008). Structural studies of nucleoside analog and feedback inhibitor binding to *Drosophila melanogaster* multisubstrate deoxyribonucleoside kinase. *FEBS J.* 275, 2151-2160.

75. Munch-Petersen, B. (2008) Reversible tetramerization of human TK1 to the high catalytic efficient form is induced by pyrophosphate, in addition to tripolyphosphates, or high enzyme concentration. FEBS journal. In press.

PATENTS AND PATENT APPLICATIONS

Munch-Petersen, B., Piskur, J., Søndergaard, L and Ihlenfeldt, H-G/Boehringer Mannheim GmbH: Patent application DE 1998 1046 838: Deoxynukleosidkinase aus insektenzellen zur Nukleosidmonophosphat synthese. 1998.

Piskur, J., Knecht, W., Munch-Petersen, B., and NS GENE: Patent application PA 2000 00781. Multi-substrate insect deoxynucleoside kinase variants. 2000.

Knecht, W., Munch-Petersen, B., Piskur, J., NsGene and Zgene: Plant thymidine kinases and their use. DK PA 2002 00794. 2002.

Knecht, W., Munch-Petersen, B., Piskur, J., NsGene and Zgene: Plant deoxyribonucleoside kinases (dNK) and their use. DK PA 2002 00981.

Munch-Petersen B and Søndergaard L: Cell Cycle Acting Protein and the use thereof. PA 2008 00917. Filed in EU.