

Curriculum vitae (08/05)

Name: Iris Lindberg

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Education:

June 1975 - B.A. (Biochemistry), University of California at Berkeley

Dec. 1980 - Ph.D. (Pharmacology), University of Wisconsin at Madison

Employment:

July 1994 - present	Professor, Dept of Biochemistry and Molecular Biology; Member, Neurosciences Center Steering Committee
July 1989 - June 1994	Associate Professor, Dept. of Biochemistry and Molecular Biology; Member, Neurosciences Center Steering Committee
Sept 1984 - June 1989	Assistant Professor, Dept. of Biochemistry and Molecular Biology; Member, Neurosciences Center Steering Committee Louisiana State University Medical School, New Orleans, LA
Jan. 1981 - Sept. 1984	Staff Fellow, NRSA Postdoctoral Fellow and Pharmacology Research Associate (PRAT program) Laboratory of Preclinical Pharmacology, NIMH, St. Elizabeth's Hospital, Washington D.C.
Sept. 1975 - Dec. 1980	NIH Predoctoral Fellow and Research Assistant Dept. of Pharmacology Univ. of Wisconsin Medical School, Madison, WI

Honors and Fellowships:

NIH Individual Postdoctoral Fellowship (1981)
Pharmacology Research Associate Traineeship (1981-1983)
Research Career Development Award (NIDDK) (1988-1993)
Research Scientist Development Award (NIDA) (1993-1998)
Research Scientist Development Award (NIDA) (1998-2003)

Membership in Societies:

Society for Neuroscience (1978- present)
Winter Conference on Brain Research (1981-present)
International Narcotics Research Conference (1978- present)
American Society for Biochemistry and Molecular Biology (1985- present)
American Society for Cell Biology (1999- present)
The Endocrine Society (2001-present)

Past Grant Support: (as P.I.)

1) Pharmaceutical Manufacturer's Association Starter Grant (1/85-12/86)
"Pharmacologic control of opioid peptide biosynthesis."

2) R01 DK35199 (4/85- 11/91) (two competitive awards)

"Biosynthesis of enkephalin in the adrenal medulla."

3) R01 DA05084 (4/88- 4/04) (four competitive awards)

"Opioid peptide synthesizing enzymes."

4) R01 DK49703 (7/96- 3/02) (two competitive awards)

"Control of peptide hormone biosynthesis by PC2 and 7B2"

5) K04 DK01868 (7/88-6/93)

Research Career Development Award (90-100% salary)

6) K02 DA00204 (10/93- 9/03) (two competitive awards)

Research Scientist Development Award (75% salary)

7) R21 AI 053517 (9/02-8/05) (20% effort) (I. Lindberg, PI)

"Blockade of anthrax toxin cytotoxicity using furin inhibitors"

Past Research Support as Mentor:

1) to Dr. Xiaorong Zhu, NRSA postdoctoral fellowship, 7/95-6/98

2) to Ms. Yolanda Fortenberry, NRSA predoctoral fellowship, 10/97-8/01

Current Research Support:

1) R01 DA05084 (5/04- 4/09) (30% effort) (I. Lindberg, PI)

"Opioid peptide synthesizing enzymes."

2) R01 DK49703 (4/02- 3/07) – (30% effort) (I. Lindberg, PI)

"Control of peptide hormone biosynthesis by PC2 and 7B2"

3) (SBIR R43 A1056850) (8/03-8/06) (5% effort) (P. Sunkara, PI)

"Hexa-D-Arg: a furin inhibitor for anthrax biodefense"

Subcontract, Molecular Therapeutics

4) 1 R21 AI058714-01 09/30/04 - 9/29/06 (5% effort) (S. Pincus, PI)

"Furin Inhibition in HIV Disease"

Company Relationships:

1) Torrey Pines Institute for Molecular Studies (San Diego): Collaborator- 1995-present

2) Molecular Therapeutics (Ann Arbor) Consultant- 2003- present

3) Five-Prime Therapeutics (San Francisco)- 2005- consultant

Intramural Activities:

Graduate Student Recruitment Committee (Biochem Dept.) (1986- 1988)

Secretary, Local Chapter of the Society for Neuroscience (1985- 86, 88- 89)

Recruitment brochure (Biochem. Dept.) (1990, 1992, 1995, 1997)

Thesis Committees: *Minetta Gardinier, Jeremy Springhorn, Richard Shen, Yi Zhou, John Mathis, Tamim Shaikh, Erik Pakarinen, Joomyeong Kim, Virginia Strand, Astrid Roy, Ping Wei, Mary Breslin, Neva West, Yolanda Fortenberry, Mike Serou, Changning Gong, Bin Tu, Peimin Zhu, Yuri Peterson, Faramarz Taheri, Elly Park, Tanya Roy.*

LSUMC Graduate Council (1992- 1997)

Faculty Recruitment Committee, Neuroscience Center (1996- 2000)

Recruitment Committee, Neuroscience Center Graduate Program (1997- 2002)

LSU School of Medicine Research Retreat Committee, 2001

Neuroscience Center Executive Steering Committee (1985- present)

LSUHSC Research Council (2003- present)
LSUHSC Graduate Council (2004- present)
Faculty Recruitment Committee, Biochem. Dept., 2004- 2005
Graduate Advisor, Dept. Biochem, 2004- 2005
Graduate Recruitment Committee, Dept. Biochem., 2004- 2005

Extramural Activities:

1. Ad hoc and regular grant reviewer:

NSF (Neurobiology) (1981- present; 1-2 grants /year)
NLS1 study section (2/87)
NIDA Biochemistry study section (6/89, 10/97)
NIDDK special study sections (11/89 and 3/90)
NIMH career awards study section (2/91, phone 3/03)
NINDS special study section (11/94)
NLS1 study section (6/95) and phone reviews 3/96, 10/97, 12/02
NIDDK study sections and special emphasis panels (10/95, 6/96, 12/98)
ACS study section (6/99)
Regular member of Endocrinology Study Section, 10/96- 6/00
Endocrinology Study Section *ad hoc* service: 2/01, 2/02, 6/02, 2/03, 9/03, 6/04, 10/04, 6/05
Finnish National Academy of Sciences Review Panel, Helsinki, Finland 3/02; 9/03 (Chair)

2. Ad hoc review of manuscripts (1-2 each per year): J. Neurochem., Peptides, J. Neurosci., Endocrinol.,
Analyt. Biochem.

3. Editorial Board Service (40 manuscripts per year): Journal of Biological Chemistry *July 2000 - July 2005*

4. Gordon Conference Service:

Advisory Committee, Hormonal and Neural Peptide Synthesis 1998- 2000
Vice-Chair of Gordon Conference, Hormonal and Neural Peptide Synthesis *July 2002*
Chair of Gordon Conference, Hormonal and Neural Peptide Synthesis *July 2004*
(same conference was renamed "Proprotein Processing, Trafficking, and Secretion")

Graduate Students supervised: (rotation students not listed)

1. Fu-sheng Shen (1986- 1988) (Ph.D. 1990, from Institute of Physiology, Beijing)
2. John Mathis (1988- 1994)
3. Yi Zhou (1990- 1994)
4. Yolanda Fortenberry (1997- 2001)
5. Maria Sayah (3/00- 12/00) (Master's thesis; French practical training)
6. Valery Iattignon (1/04- 4/04) (Master's thesis; French practical training)

Postdoctoral Fellows supervised

1. Dr. Nympha B. D'Souza (1987-1988)
2. Dr. Steven F. Roberts (1988- 1991)
3. Dr. Joseph Irvine (1989- 1991)
4. Dr. Osvaldo Vindrola (1991- 1993)
5. Dr. Fu-sheng Shen (1991- 1992)
6. Dr. Xiaorong Zhu (1994- 1997)
7. Dr. Nazarius Lamango (1994- 1996)
8. Dr. Karla Johanning (1994- 1998)
9. Dr. Laurent Muller (1996- 1999)
10. Dr. Ekaterina Apletalina (1997- 2000)
11. Dr. Angus Cameron (1999- 2000)
12. Dr. Jae-Ryoung Hwang (1998- 2001)
13. Dr. Ashok Dubey (2000- 2001)
14. Dr. Emmanuel Prodhomme (2001-2002)

15. Dr. Virginie Laurent (1999-2002)
16. Dr. Weidong Liu (2001-2002)
17. Dr. Miroslav Sarac (2000- 2003)
18. Dr. Juan Ramon Peinado (2003-2004)
19. Dr. Bainan Liu (2004- 2005)
20. Dr. Sang-Nam Lee (2002- present)
21. Dr. Magdalena Kacprzak (2003- present)
22. Dr. Cristina Caescu (2005- present)
23. Dr. Dorota Kowalska (2005- present)
24. Dr. Anastassia Konash (2005- present)

Invited Presentations and Talks in Past Five Years (outside LSUHSC):

January 1999 Amgen, Thousand Oaks, CA
October 1999 Society for Neuroscience symposium organizer/speaker, Miami, FL
November 1999 University of Louisville, Louisville, KY
February 2000 Oregon Health Sciences University
July 2000 Gordon conference speaker, New Hampshire
February 2002 Purdue University, Dept. Chemistry
February 2002 Entremed Corporation, Rockville, MD
March 2002 Biological Institut, Copenhagen, Denmark
July 2002 Gordon Conference speaker, New Hampshire
March 2003 Endocrine Division, Brown University, Rhode Island
March 2003 Max-Planck Institute for Biochemistry, Martinsried, Germany
December 2003 Dept. of Medicine, Endocrine Division, University of Michigan, Ann Arbor, Michigan
May 2004 University of Miami, Miami, FL
Sept. 2004 Five Prime Therapeutics, San Francisco
March 2005 Max-Planck Institute for Biochemistry, Martinsried, Germany
April 2005 Pfizer Pharmaceuticals, St Louis, MO

Teaching Responsibilities:

1985- 1986: Dental Biochemistry (17 lecture h per year)
 1991, fall: Graduate seminar in the cell biology of protein targeting (jointly with Dr. Jack Coleman)
 1997 Endocrinology -- 2 h (on radioimmunoassay and opioid peptides)
 1985-2005 One lecture in "Methods in Neuroscience" (course given at Tulane University in alternate years on protein expression methods) (2 h)
 1987 -1999 Medical Biochemistry (17 h)
 1995 - 2001 Neuroscience Survey (2 h)
 1998- present Molecular Neuroscience (on neurotransmitters) (4 h)
 2000 Nursing Biochemistry (20 h)
 2001 Graduate Seminar in Protein Motifs (20 h)
 2001, 2002 Graduate Seminar in Methods in Biochemistry (Special Topics) (Protein Expression) (2h)
 2003, 2005 Endocrinology (Bioactive Peptides; and Radioimmunoassay) (4 h and 2h)
 2003- 2005 Graduate Seminar in Student Research (Professional Skills). Graduate student mentoring: giving talks, preparing grants, writing papers, career choices (30h)

Bibliography:

Research Papers

1. Lindberg, I., Smythe, S., and Dahl, J.L. (1979) Distribution of enkephalin in bovine brain. *Brain Research*, 168, 200-203.
2. Lindberg, I., and Dahl, J.L. (1981) Characterization of enkephalin release from rat striatum. *J. Neurochem.* 36, 506-512.
3. Epstein, M., Lindberg, I., and Dahl, J.L. (1981) Development of enkephalinergic neurons in the gut of the chick. *Peptides* 2, 271-276.

4. Epstein, M., Dahl, J.L., and Lindberg, I. (1982) Ontogeny of leu- and met-enkephalin in chick brain; an enkephalin-like substance present in embryonic, but not adult brain. In: Rich, D., and Gross, E. (Eds.) *Proceedings of the Seventh American Peptide Symposium*. Rockford, Illinois, Pierce Chemical Co., pp 633-636.
5. Lindberg, I., Yang, H.-Y.T., and Costa, E. (1982) Enzymatic production of met⁵- and leu⁵-enkephalin in adrenal chromaffin granules. In: (M. Trabucchi and E. Costa, Adv. Biochem. Psychopharmacol. 33, 183-191
6. Lindberg, I., Yang, H.-Y.T., and Costa, E. (1982) An enkephalin-generating enzyme in bovine adrenal medulla. *Biochem. Biophys. Res. Commun.* 106, 186-1934.
7. Dahl, J.L., Epstein, M.L., Silva, B.W., and Lindberg, I. (1982) Multiple forms of met⁵- and leu⁵-enkephalin in fetal and neonatal rat brain and gut. *Life Sci.* 31, 1853-1856.
8. Lindberg, I., Yang, H.-Y.T., and Costa, E. (1982) Characterization of a partially purified trypsin-like enkephalin-generating enzyme in bovine adrenal medulla. *Life Sci.* 31, 1713-1716.
9. Lindberg, I., and Yang, H.-Y.T. (1983) A met⁵- and leu⁵-enkephalin-generating enzyme in bovine adrenal medulla. In: Hanin, I. (ed.) *Dynamics of Neurotransmitter Function*. New York, Raven Press.
10. Lindberg, I., Yang, H.-Y.T., and Costa, E. (1983) A high molecular weight form of met⁵-enkephalin-arg⁶-gly⁷-leu⁸ in rat brain and bovine adrenal chromaffin granules. *Life Sciences* 33 Supp. I., 5-8.
11. Lindberg, I., and Yang, H.-Y.T. (1984) Distribution of met⁵-enkephalin-arg⁶-gly⁷-leu⁸-immunoreactive peptides in rat brain: presence of multiple immunoreactive forms. *Brain Research* 299, 73-78.
12. Lindberg, I., Yang, H.-Y.T., and Costa, E. (1984) Further characterization of an enkephalin-generating enzyme from bovine adrenal chromaffin granules. *J. Neurochem.* 42, 1411-1419.
13. Lindberg, I., Yang, H.-Y.T., and Costa, E. (1985) Release of multiple immunoreactive forms of met⁵-enkephalin-arg⁶-gly⁷-leu⁸ from rat brain. *Neuropeptides* 5, 541-544.
14. Lindberg, I., and White, L. (1986) Reptilian enkephalins: implications for the evolution of proenkephalin. *Arch. Biochem. Biophys.* 245, 1-7.
15. Wang, Y.N. and Lindberg, I. (1986) Distribution and characterization of met-enkephalin-arg-gly-leu in the gastrointestinal tract of the rat. *Cell and Tiss. Res.* 244, 77-85.
16. Lindberg, I., and White, L. (1986) Distribution of immunoreactive Peptide B in the rat brain. *Biochem. Biophys. Res. Commun.* 139, 1024-1032.
17. Lindberg, I. (1986) Reserpine-induced alterations in the processing of proenkephalin in cultured chromaffin cells: increased amidation. *J. Biol. Chem.* 261, 16317-16323.
18. Panula, P., and Lindberg, I. (1987) Pituitary enkephalins: biochemical and immunohistochemical observations. *Endocrinology* 121, 48-58.
19. Lindberg, I. (1987) The chromaffin granule trypsin-like protease- a kallikrein? In Proteases in Biological Control and Biotechnology (Eds: D.D. Cunningham & G. Long) pp. 269-275.
20. Byrd, J., Naranjo, J., and Lindberg, I. (1987) Proenkephalin gene expression in the PC12 cell line: stimulation by sodium butyrate. *Endocrinology* 121, 1299-1305.
21. D'Souza, N., and Lindberg, I. (1988) Evidence for the phosphorylation of a proenkephalin-derived peptide, Peptide B. *J. Biol. Chem.* 263, 2548-2552.
22. Shen, F.S. and Lindberg, I. (1988) Characterization of enkephalin-immunoreactive peptides generated from plasma proteins by peptic digestion. *Endocrinology* 122, 2905-2910.
23. Shen, F.-S., and Lindberg, I. (1989) Purification and assay of opioid activity of low molecular weight enkephalin-immunoreactive peptides generated by peptic digestion of rat plasma proteins. *Neuropeptides* 13, 23-28.
24. Shen, F.-S. and Lindberg, I. (1989) Salt inhibition of the adrenal trypsin-like enzyme. *Adv. in Biosciences* 75, 237-240. Pergamon Press (M. Hamon, Ed.).
25. Shen, F.-S., Roberts, S.F., and Lindberg, I. (1989) A putative processing enzyme for proenkephalin in bovine adrenal chromaffin granules- purification and characterization. *J. Biol. Chem.* 264, 15600-15605 (1989).
26. Lindberg, I., and Thomas, G. (1990) Cleavage of proenkephalin by a chromaffin granule processing enzyme. *Endocrinology* 126, 480-487.
27. Irvine, J., Roberts, S.F., and Lindberg, I. (1990) Electrophoretic analysis of proteinases in sodium dodecyl sulfate polyacrylamide gels containing copolymerized radiolabelled protein substrates: application to proenkephalin processing enzymes. *Analyt. Biochem.* 190, 141-146.
28. Lindberg, I., Shaw, E., Finley J., Leone, D., and Deininger, P. (1991) Posttranslational modifications of recombinant rat proenkephalin overexpressed in Chinese hamster ovary cells. *Endocrinology* 128, 1849-1856.
29. Irvine, J.W., and Lindberg, I. (1991) Partial purification and characterization of a putative prohormone processing enzyme complex from bovine pituitary. *Endocrinology*, 128, 2345-2352.

30. Lindberg, I., and Shaw, E. (1992) Posttranslational processing of proenkephalin in a human neuroblastoma cell line, SK-N-MC. *J. Neurochem.* 58, 458-453.
31. Roberts, S.F., Irvine, J.W., and Lindberg, I. (1992) Proteolytic activity in bovine adrenal chromaffin granules visualized using [³⁵S]methionine-labelled proenkephalin copolymerized into SDS-PAGE. *J. Neurochem.* 58, 593-599.
32. Lindberg, I., Lincoln, B., and Rhodes, C.J. (1992) Fluorometric assay of a calcium-dependent, paired basic processing endopeptidase present in insulinoma granules. *Biochem. Biophys. Res. Commun.* 183, 1-7.
33. Vindrola, O., and Lindberg, I. (1992) Biosynthesis of the prohormone convertase mPC1 in AtT-20 cells. *Mol. Endocrinol.* 6, 1088-1094.
34. Mathis, J., and Lindberg, I. (1992) Posttranslational processing of proenkephalin in AtT-20 cells: evidence for cleavage at a Lys-Lys site. *Endocrinology* 131, 2287-2296.
35. Zhou, Y., and Lindberg, I. (1993) Purification and characterization of the prohormone convertase PC1 (PC3) *J. Biol. Chem.* 268, 5615- 5623.
36. Shen, F.S., Seidah, N.G., and Lindberg, I. (1993) Biosynthesis of the prohormone convertase PC2 in Chinese hamster ovary cells and in rat insulinoma cells. *J. Biol. Chem.* 268, 24910-24915.
37. Breslin, M., Lindberg, I., Benjannet, S., Lazure, C., Mathis, J.P., and Seidah, N.G. (1993) Processing of proenkephalin by PC1(PC3), PC2, and furin. *J. Biol. Chem.* 268, 27084-27093.
38. Vindrola, O., and Lindberg, I. (1993) Release of the prohormone convertase PC1 from AtT-20 cells. *Neuropeptides* 25, 151-160.
39. Hornby, P.J., Rosenthal, S.D., Mathis, J.P., Vindrola, O., and Lindberg, I. (1993) Immunocytochemical analysis of the neuropeptide-synthesizing enzyme PC1 in AtT-20 cells. *Neuroendocrinol.* 58, 555-563.
40. Dupuy, A., Lindberg, I., Zhou, Y., Akil, H., Lazure, C., Chretien, M., Seidah, N.G., and Day, R. (1994) Processing of prodynorphin by the prohormone convertase PC1 results in high molecular weight intermediate forms: cleavage at a single arginine. *FEBS Lett.* 337:60-65.
41. O'Hara, B.F., Donovan, D., Lindberg, I., Brannock, M.T., Ricker, D.D., Moffatt, C.A., Klaunberg, B.A., Schindler, C., Chang, T.S.K., Nelson, R.J., and Uhl, G.R. (1994) Proenkephalin transgenic mice: a short promotor confers high testis expression and reduced fertility. *Mol. Reprod. and Devel.* 38, 275-284.
42. Martens, G.M., Braks, A.M., Eib, D., Zhou, Y., and Lindberg, I. (1994) The neuroendocrine polypeptide 7B2 is a naturally occurring inhibitor of the prohormone convertase PC2. *Proc. Nat. Acad. Sci.* 91, 5784-5785.
43. Lindberg, I. (1994) Evidence for cleavage of the PC1/PC3 prosegment in the endoplasmic reticulum. *Mol. Cell. Neurosci.* 5, 263-268.
44. Zhou, Y., and Lindberg, I. (1994) Enzymatic properties of carboxy-terminally truncated prohormone convertase 1 (PC1/PC3. *J. Biol. Chem.* 269, 18408-18413.
45. Lindberg, I., Ahn, S.C. and Breslin, M.B. (1994) Cellular distributions of the prohormone processing enzymes PC1 and PC2. *Mol. Cell. Neurosci.* 5, 614-622.
46. Lindberg, I., Van den Hurk, W.H., Bui, C.B., and Batie, C.J. (1995) Enzymatic characterization of immunopurified prohormone convertase PC2: potent inhibition by a 7B2 peptide fragment. *Biochemistry* 34, 5486- 5493.
47. Rothenberg, M.E., Eilertson, C.D., Klein, K., Zhou, Y., Lindberg, I., McDonald, J.K., and Noe, B.D. (1995) Processing of mouse proglucagon by recombinant PC1 and PC2. *J. Biol. Chem.* 270, 10136-10146.
48. Van Horssen, A. M., Van den Hurk, H., Bailyes, E.M., Hutton, J.C., Martens, G.J.M., and Lindberg, I. (1995) Identification of the region within the neuroendocrine polypeptide 7B2 responsible for the inhibition of prohormone convertase 2. *J. Biol. Chem.* 270, 14292-14296.
49. Zhu, X., and Lindberg, I. (1995) 7B2 facilitates the maturation of proPC2 in neuroendocrine cells and is required for the expression of enzymatic activity. *J. Cell Biol.* 129, 1641-1650.
50. Zhou, Y., Rovere, C., Kitabgi, P., and Lindberg, I. (1995) Mutational analysis of PC1 in PC12 cells: 66 kDa PC1 is fully functional. *J. Biol. Chem.* 270, 24702-24706.
51. Johanning, K., Mathis, J.P., and Lindberg, I. (1996) Role of the prohormone convertase PC2 in proenkephalin processing: antisense and overexpression studies. *J. Neurochem.* 66, 898-907.
52. Zhu, X., Rouille, Y., Lamango, N. S., Steiner, D. F., and Lindberg, I. (1996) Internal cleavage of the PC2 inhibitor 7B2 CT peptide: a potential inactivation mechanism. *Proc. Natl. Acad. Sci.* 93, 4919-4924.
53. Lamango, N., Zhu, X., and Lindberg, I. (1996) Purification and enzymatic characterization of recombinant PC2: stimulation of activity by 21 kDa 7B2. *Archives of Biochem. Biophysics* 330, 238-250.
54. Zhu, X., Lamango, N.S., and Lindberg, I. (1996) Involvement of a polyproline helix-like structure in the interaction of 7B2 with prohormone convertase 2. *J. Biol. Chem.* 271, 23582-23587.
55. Johanning, K., Mathis, J.P., and Lindberg, I. (1996) Processing site blockade results in more efficient conversion of proenkephalin to active opioid peptides. *J. Biol. Chem.* 271, 27871-27878.

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57. Zhu, X., Muller, L., Mains, R.E. and Lindberg, I. (1998) Structural elements of PC2 required for its interaction with its helper protein 7B2. *J. Biol. Chem.* 273, 829-836.
58. Day, R., Lazure, C., Basak, A., Boudreault, A., Limperis, P., Dong, W., and Lindberg, I. (1998) Prodynorphin processing by proprotein convertase 2 (PC2): cleavage at single basic residues and enhanced processing in the presence of carboxypeptidase. *J. Biol. Chem.* 273, 1153- 1164.
59. Lindberg, I., Tu, B., Muller, L., and Dickerson, I. (1998) Cloning and functional analysis of *C. elegans* 7B2. *DNA and Cell Biol.* 17, 727-734.
60. Apletalina, E., Appel, J., Lamango, N.S., Houghten, R., and Lindberg, I. (1998) Identification of potent inhibitors of prohormone convertases 1 and 2 using a peptide combinatorial library. *J. Biol. Chem.* 273, 26589-26595.
61. Johanning, K., Juliano, M.A., Juliano, L., Lazure, C., Lamango, N., Steiner, D.F., and Lindberg, I. (1998) Specificity of prohormone convertase 2 on proenkephalin and proenkephalin-related fluorogenic peptides. *J. Biol. Chem.* 273, 22672-22680.
62. Lamango, N.S., Apletalina, E., Liu, J., and Lindberg, I. (1999) Conversion of proPC2 is a pH-driven process. *Arch. Biochem. Biophys.* 362, 275-282.
63. Westphal, C.H., Muller, L., Zhou, A., Zhu, X., Bonner-Fraser, S., Schambelan, M., Steiner, D.F., Lindberg, I.* Leder, P.* (1999) The neuroendocrine protein 7B2 is required for peptide hormone processing *in vivo* and provides a novel mechanism for pituitary Cushing's disease. *Cell* 96, 689-700. (*co-senior authors)
64. Muller, L., Zhu, P., Juliano, M.A., Juliano, L., and Lindberg, I. (1999) A 36-residue peptide contains all of the information required for 7B2-mediated activation of proPC2. *J. Biol. Chem.*, 274, 21471-21477.
65. Fortenberry, Y., Liu, J., and Lindberg, I. (1999) The role of the CT peptide in the inhibition of PC2 *in vivo*. *J. Neurochemistry*, 73, 994-1003.
66. Apletalina, E., Juliano, M. A., Juliano, L. and Lindberg, I. (2000) Structure-function analysis of the 7B2 CT peptide: mechanism of inhibition of PC2. *Biochem. Biophys. Res. Commun.* 267, 940-942.
67. Apletalina, E., Muller, L., and Lindberg, I. (2000) Mutations in the catalytic domain of prohormone convertase 2 result in loss of binding to 7B2 and inhibition with 7B2 CT peptide. *J. Biol. Chem.*, 275, 14667-14677.
68. Hwang, J.R., Siekhaus, D., Fuller, R.S., Taghert, P., and Lindberg, I. (2000) Characterization of prohormone convertase 2 and 7B2 from *Drosophila melanogaster*. *J. Biol. Chem.* 275, 17886-17893.
69. Cameron, A., Fortenberry, Y., and Lindberg, I. (2000) The SAAS granin exhibits functional homology to 7B2 and contains a highly potent hexapeptide inhibitor against PC1. *FEBS Lett.* 473, 135-138.
70. Cameron, A., Appel, J., Houghten, R.A. and Lindberg, I. (2000) Polyarginines are potent furin inhibitors. *J. Biol. Chem.* 275, 36741-36749.
71. Muller, L.*, Cameron, A.*, Apletalina, E., Fortenberry, Y. and Lindberg, I. (2000) Processing and sorting of the prohormone convertase 2 propeptide. *J. Biol. Chem.*, 275, 39213- 39222.. (*these authors contributed equally to the work)
72. Sayah, M., Fortenberry, Y., Cameron, A., and Lindberg, I. (2001) Distribution and enzymatic generation of proSAAS-derived peptides. *J. Neurochem.* 76, 1833-1841.
73. Hwang, J.R., and Lindberg, I. (2001) Inactivation of the 7B2 inhibitory CT peptide depends on a functional furin cleavage site. *J. Neurochem.* 79, 437-44.
74. Zachariah, C., Cameron, A., Lindberg, I., Kao, K.J., Beinfeld, M., and Edison, A. (2001) Structural studies of a neuropeptide precursor protein with an RGD proteolytic site. *Biochemistry* 40, 8790-8799.
75. Rehfeld, J.F., Lindberg, I., Friis-Hansen, L. (2002) Progastrin-derived peptides differ in 7B2 and PC2 knockout animals: a role for 7B2 independent of action on PC2. *FEBS Lett.* 510, pp. 89-9382.
76. Fortenberry, Y., Hwang, J.R., Apletalina, E.V., Lindberg, I. (2002) Functional characterization of proSAAS: similarities and differences with 7B2. *J. Biol. Chem.* 277, 5175-5186.
77. Sarac, M., Windeatt, S., Castro, M., and Lindberg, I. (2002) Adenoviral administration of 7B2 reverses endocrinological deficiencies in 7B2 null mice. *Endocrinology* 143, 2314-23.
78. Sarac, M., Zieske, A.W., and Lindberg, I. (2002). The lethal form of Cushing's in 7B2 null mice is due to multiple metabolic and hormonal abnormalities. *Endocrinology*, 143, 2324-32.
79. Laurent, V., Kimble, A., Peng, B., Zhu, P., Pintar, J., Steiner, D.F. and Lindberg, I. (2002) Mortality in 7B2 null mice can be rescued by adrenalectomy: involvement of dopamine in ACTH hypersecretion. *Proc. Natl. Acad. Sci. USA* 99, 3087.

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Patents

1. Patent # 6548736 on the 7B2 null mouse has been granted to C.H. Westphal, I. Lindberg, and P. Leder.
2. A patent on polyarginine furin inhibitors was applied for in July 2001 by LSUHSC. (Inventors: I. Lindberg, A. Cameron, J. Appel, and R.A. Houghten).

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